

JVC

SERVICE MANUAL

COLOUR TELEVISION

AV-21PM(AU)

BASIC CHASSIS
CG-F

This service manual mainly consists of the following items:

- The items which differ from those for the AV-21PM service manual.
- The initial value for each setting item.

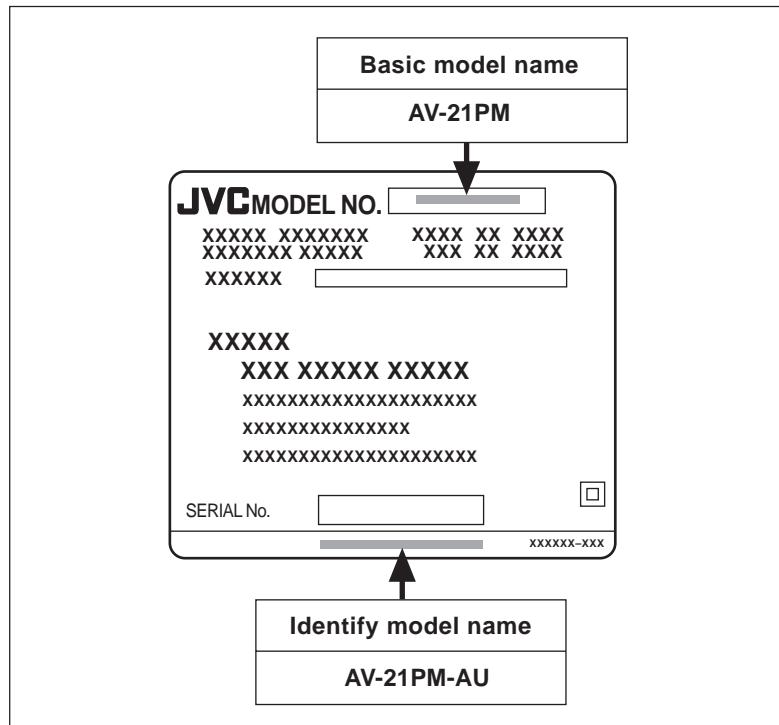
For details other than those described in this manual, please refer to the following service manual.

Reference Service Manual: AV-21PM Service Manual (No. 56055, Aug. 2000)

Note: The page in parentheses shows the one for the AV-21PM service manual (No. 56055, Aug. 2000).

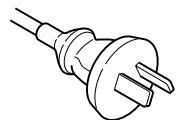
HOW TO IDENTIFY MODEL

While referring to the illustration given below, identify model name on the rating label affixed to the rear cover.



PARTS DIFFERENCE TABLE

The different parts between AV-21PM and AV-21PM(AU) are described below:

△	REF. NO.	AV-21PM	AV-21PM(AU)	PART NAME	DESCRIPTION
		PART No.	PART No.		
■ EXPLODED VIEW PARTS LIST (Page 30)					
△	14	QMP40D0-200J5 or QMP40D0-200J3 	QMP2980-185J5 	POWER CORD	
△	17	LC20377-010B-H	LC20377-013B-H	RATING LABEL	
■ PACKING PARTS LIST (Page 38)					
△	8	LCT0796-001A-H	_____	DIGEST MANUAL	
	—	_____	BT-56001-2	WARRANTY CARD	
	—	_____	BT-56002-2	SERVICE CENTER LIST	

SPECIFICATIONS (Page 2)

Item		Content
Dimensions (W × H × D)		596mm × 468.5mm × 481.5mm
Mass		25kg
TV RF System		B / G, I, D / K, K1, M
Colour System	TV Mode	PAL / SECAM / NTSC3.58 / NTSC4.43
	VIDEO Mode	PAL / SECAM / NTSC3.58 / NTSC4.43
Receiving Frequency	VHF (VL)	46.25MHz ~ 168.25MHz
	VHF (VH)	175.25MHz ~ 463.25MHz
	UHF	471.25MHz ~ 863.25MHz
	CATV	● Cable TVs of Mid (X-Z, S1-S10) Super (S11-S20) & Hyper (S21-S41) bands receivable
Intermediate Frequency	VIF Carrier	38.0MHz
	SIF Carrier	31.5MHz (6.5MHz) 32.0MHz (6.0MHz) 32.5MHz (5.5MHz) 33.5MHz (4.5MHz)
Colour Sub Carrier Frequency		PAL (4.43MHz) SECAM (4.40625MHz / 4.25MHz) NTSC (3.58MHz / 4.43MHz)
Aerial Input Terminal		75Ω Unbalanced
Power Input		AC110 ~ 240V, 50/60Hz
Power Consumption		116W (Max.) / 74W (Avg.)
Picture Tube		Visible size : 51cm measured diagonally
High Voltage		28.0kV ± 1.5kV (at zero beam current)
Speaker		5cm × 12cm Oval type × 2
Audio Output		5W (Monaural)
Input	Video	1Vp-p, 75Ω
	Audio	500mVrms (-4dBs), High impedance
Output	Video	1Vp-p, 75Ω
	Audio	500mVrms (-4dBs), Low impedance
Headphone Jack		Stereo mini jack (3.5Ø)
Remote Control Unit		RM-C364-1H (Battery size : AA/R06/UM-3 × 2)

Design & specifications are subject to change without notice.

SPECIFIC SERVICE INSTRUCTIONS

SETTING OF SYSTEM CONSTANT SET (Page 7)

Table 1

Setting item	Setting contents	Setting value
COLOUR	► MULTI. ► TRIPLE ► PAL □	MULTI
BILINGUAL	► YES ► NO □	NO
TUNER	► MU ► MA □	MU
ECO SENSOR	► YES ► NO □	YES
LANGUAGE	► E/R/A/F ► E/A/F ► E/A ► E/F □	E/R/A/F
B/B SOUND	► ON ► OFF □	OFF
LOCK	YES ▲ 10 ▲ 20 ▲ ... ▲ 230 ▲ 250 ▲ 240 ▲	180
COLOUR AUTO	► YES ► NO □	NO
QSS	► MINT ► MQSS □	MINT
ALC	► YES ► NO □	NO
TEXT RATE	10 ▲ 20 ▲ 40 ▲ 80	20
AMP TUNER	► YES ► NO □	NO
VNR	► YES ► NO □	YES
EW-PIN IC	► YES ► NO □	YES

USER SETTING VALUES (Page 7)

Table 2

Setting item	Setting value	Setting item	Setting value
SUB POWER	ON	PICTURE MODE (VSM)	BRIGHT
CHANNEL POSITION	1 POSITION	VNR	OFF
CHANNEL PRESET	Refer to OPERATING INSTRUCTION	OFF TIMER	OFF
		LANGUAGE	ENGLISH
VOLUME	Appropriate sound volume	AUTO SHUTOFF	OFF
TV/VIDEO	TV	ECO SENSOR	OFF
ON SCREEN DISPLAY	POSITION NUMBER DISPLAY	BLUE BACK	OFF
COLOUR SYSTEM	AUTO PAL	ON TIMER	PR1 0:00
SOUND SYSTEM	B / G	CHILD LOCK	OFF

SERVICE ADJUSTMENTS

■ Initial Setting Value

■ IF CIRCUIT ADJUSTMENT -- Adjustment of DELAY POINT (Page 15)

Setting (Adjustment) Item	Variable range	Initial setting value
DELAY POINT (AGC TAKE-OVER)	NTSC3.58	48
	Others	43

■ V/C (VIDEO/CHROMA) CIRCUIT ADJUSTMENT (Page 15)

[SUB MENU 2. V/C]

Setting item	Colour system	Variable range	Initial setting value			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
1. CUT OFF (R / G / B)		-128 ~ +127	-50	←	←	←
2. DRIVE (R / B)		-64 ~ +63	0	←	←	←
3. BRIGHT		-128 ~ +127	0	←	←	←
4. CONT.		-64 ~ +63	0	←	←	←
5. COLOUR (P / S / N3 / N4)		-64 ~ +63	0	←	←	←
6. TINT (N3 / N4)	TV / VIDEO	-64 ~ +63	—	—	0 / 0	0 / 0
7. SECAM BL ADJUST		-32 ~ +31	0	←	←	←
8. SHARP	TV / VIDEO	-32 ~ +31	-14 / +8	←	←	←

 : Do not adjust.

Adjustment of SUB COLOUR-II (Page 18)

Adjustment part	Description
5. COLOUR	
PAL COLOUR	Value (A) in the figure: Set to +12V (W & G).
SECAM COLOUR	Value (A) in the figure: Set to +13V (W & G).
NTSC 3.58 COLOUR	Value (A) in the figure: Set to +8V (W & G).

Adjustment of SUB TINT-II (Page 19)

Adjustment part	Description
6. TINT	
NTSC 3.58 TINT	Value (B) in the figure: Set to +5V (W & Cy).

■ DEFLECTION CIRCUIT ADJUSTMENT (Page 20)

[SUB MENU 3. DEF]

Setting item	Adjustment name	Variable range	Initial setting value	
			50Hz	60Hz
1. VER. POSITION	Vertical center	-4 ~ +3	-2	-2
2. HOR. POSITION	Horizontal center	-16 ~ +15	-1	+1
3. VER. HEIGHT	Vertical height	-64 ~ +63	+13	-2
4. VER. LINEARITY	Vertical linearity	-16 ~ +15	+7	0
5. VER. SCURVE	Vertical scurve	-16 ~ +15	-5	0
6. HOR. VCO ADJUST	Horizontal VCO	-64 ~ +63	0	0
7. HOR. WIDTH	Horizontal width	-32 ~ +31	-1	-5
8. EW-PIN	Side pin correction	-32 ~ +31	-5	0
9. EW-CORNER	Side pin fore correction	-8 ~ +7	-3	+2
10. TRAPEZ	Trapezoidal distortion correction	-32 ~ +31	-13	-5
11. VER. EDGE	Vertical edge correction	-8 ~ +7	0	0
12. HOR. COMP	Horizontal compensation	-8 ~ +7	-2	-2
13. VER. POS2	Vertical center 2	-4 ~ +3	0	0

 : Do not adjust.

■ VSM PRESET ADJUSTMENT (Page 23)

[Setting Values for SUB MENU 4. VSM PRESET]

VSM Setting item mode	BRIGHT	STANDARD	SOFT
TINT SETTING VALUE	+15	←	←
COLOUR SETTING VALUE	+15	←	←
BRIGHT SETTING VALUE	+15	←	←
CONT. SETTING VALUE	+30	+15	+11
SHARP SETTING VALUE	+15	←	+12

 : Do not adjust.

PRESET ADJUSTMENT (Page 24)

[SUB MENU 5. PRESET]

Colour system		Initial setting value			
		PAL	SECAM	NTSC 3.58	NTSC 4.43
1. C-TRAP FIX		1	←	←	←
2. SHARP PEAK		0	←	←	←
3. ABL		1	←	←	←
4. GAMMA		0	←	←	←
5. Y.DELAY TIME	TV	0	2	2	3
	VIDEO	0	2	0	2
6. BLACK EXP START		3	←	←	←
7. C-BPF	TV	1	←	0	←
	VIDEO	1	←	←	←
8. CW/SCP		0	←	←	←
9. V.IF DET. LEVEL		0	←	←	←
11. IF AGC MIN.		0	←	←	←
12. V.IF AGC		0	←	←	←
13. V.IF PMOD		0	←	←	←
19. VNR		15	←	←	←
20. RGB LIM.		1	←	←	←
21. RGB LIMIT LEVEL		2	←	←	←
23. TEXT H. POSITION		5	←	←	←
24. READ DATA		—	—	—	—

■ : Do not adjust.

TV RF system		Initial setting value			
		B/G	I	D/K	M
10. S.IF DET. LEVEL		0	←	←	←
14. S.IF BPF BW ADJUST		0	←	←	←
15. S.IF TRAP FO ADJUST		0	←	←	←
16. S.IF TRAP FO ADJUST 2		0	←	←	←
17. S.IF-TRAP		0	←	←	←
18. S.IF-BPF		0	←	←	1
22. S.IF SW		1	←	←	0

■ : Do not adjust.



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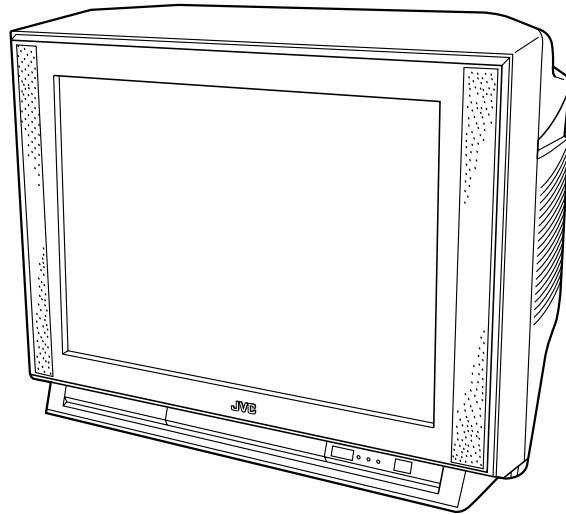
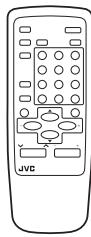
AV21PMAU-H #3

 CTH 0008
CRT

JVC**SERVICE MANUAL****COLOUR TELEVISION**

BASIC CHASSIS

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AV-21PM**CONTENTS**

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SPECIFICATIONS

Item		Content
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Headphone Jack		Stereo mini jack (3.5Ø)
Remote Control Unit		RM-C364-1H (Battery size : AA/R06/UM-3 × 2)

Design & specifications are subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (↔) side GND and EARTH : (⊕) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.
5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a $10k\Omega$ 2W resistor to the anode button.
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. Isolation Check

(Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.

(.... Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

This method of test requires a test equipment not generally found in the service trade.

(2) Leakage Current Check

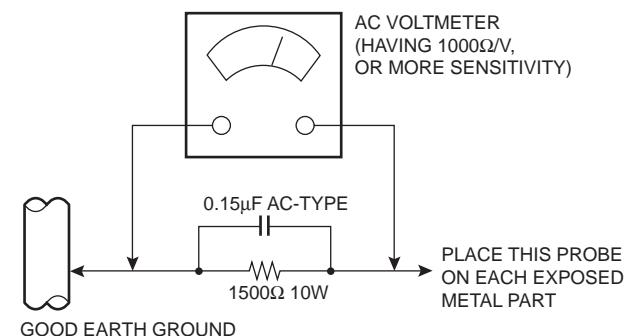
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a $0.15\mu\text{F}$ AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



FEATURES

- New chassis design enables use of an interactive on-screen control.
- Wide range voltage for AC power input.
- With AUDIO / VIDEO INPUT & OUTPUT terminals.
- MUTING button can reduce the audio level to zero instantly.
- Functional remote control to operate TV set (for channel select, volume control, power ON/OFF, etc.) from a distance.
- I²C bus control utilizes single chip ICs for IF, V/C (Video/Chroma) and VSM (Video Status Memory).
- By means of AUTO PROGRAM, the TV stations can be selected automatically and the TV channels can also be rearranged automatically.
- Built-in ECO MODE (ECONOMY, ECOLOGY)
In accordance with the brightness in a room, the brightness and/or contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Built-in ON TIMER & RETURN +.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the AC power cord.
2. Remove the 7 screws marked "A" and 1 screw marked "B". (See Fig. 2 on the next page.)
3. Withdraw the rear cover backward.

REMOVING THE PB BASE

- After removing the rear cover.

1. Slightly raise both sides of the PB Base by hand and remove the 2 claws under both sides of the PB Base from the front cabinet. (See Fig. 2.)
2. Withdraw the PB Base backward.
(If necessary, take off the wire clamp, connectors etc.)

REMOVING THE CONTROL BASE

- After removing the Rear Cover and the PB Base.

1. While pushing down the claws marked "C", remove the Control Base forward (in the arrow direction marked "D"). (See Fig. 1.)
(If necessary, take off the wire clamp, connectors, etc.)

REMOVING THE SPEAKER

- After removing the rear cover.

1. Remove the Speaker block by removing the 2 screws marked "E". (See Fig. 2.)
2. Remove the Speaker by removing the 4 screws marked "F". (See Fig. 2.)
3. Follow the same steps for removing the other hand speaker.

CHECKING THE MAIN PW BOARD

To check the back side of the Main PW Board, follow the next steps.

1. Pull out the PB Base. (Refer to "REMOVING THE PB BASE".)
2. Erect the PB Base vertically so that you can easily check the back side of the Main PW Board.

CAUTION:

- When erecting the PB Base, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.
- When repairing, connect the Deg. coil to the DEG. connector on the Main PW Board.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

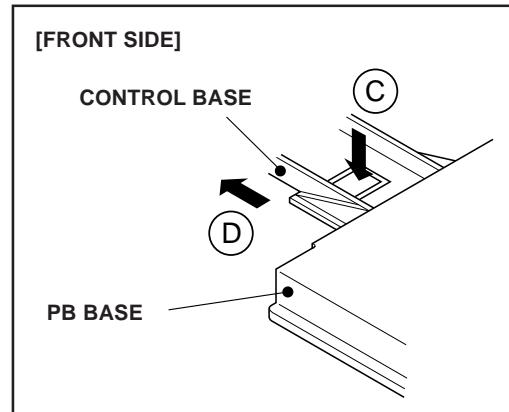


Fig. 1

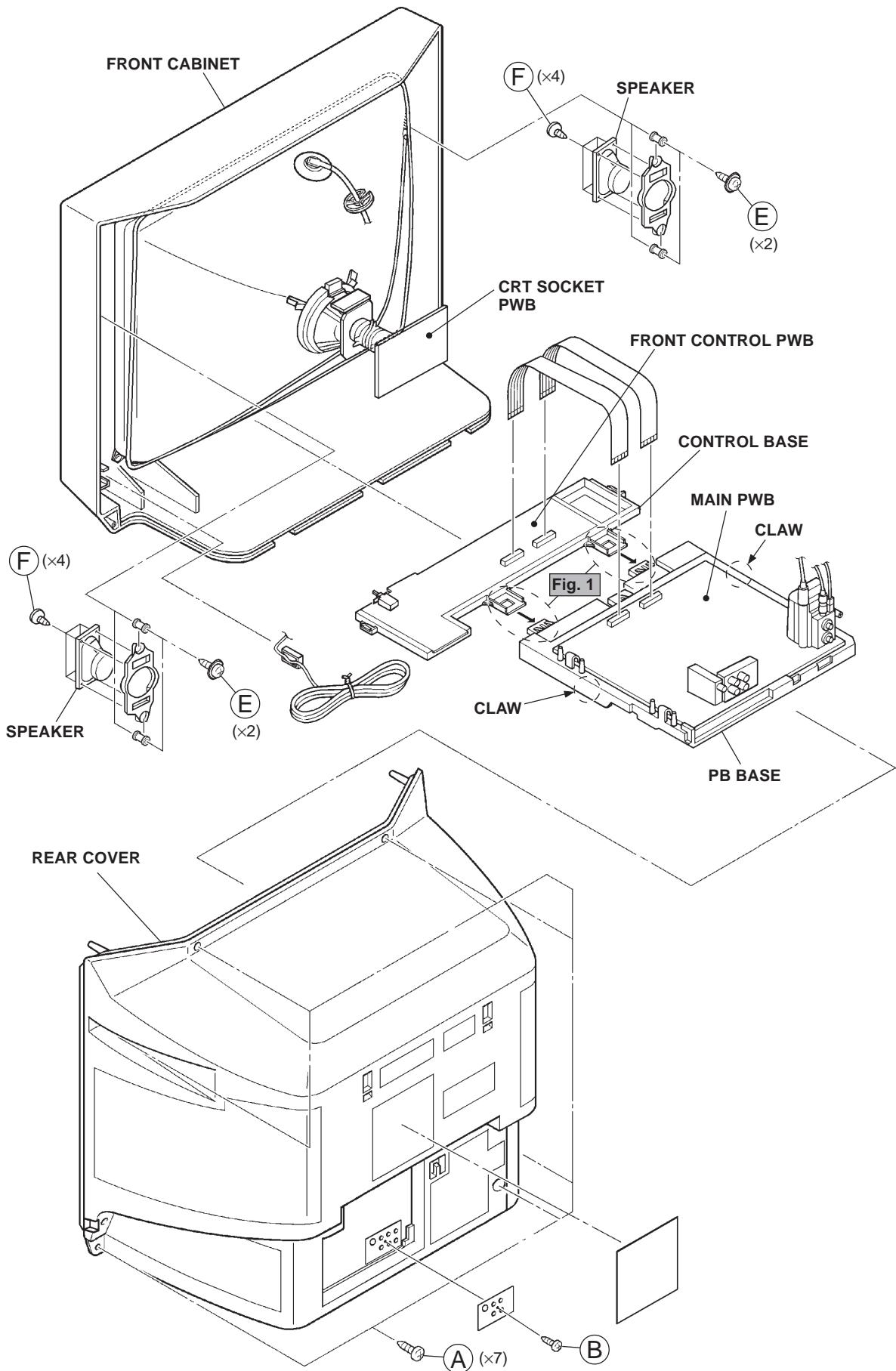


Fig. 2

REPLACEMENT OF MEMORY IC

1. MEMORY IC

This TV uses the following memory IC.

Memory IC: IC1702 on MAIN PW Board

The memory IC memorizes data for correctly operating the video and deflection circuits. When replacing the memory IC, be sure to use the same type IC written with the initial values of data. In other words, use the specific IC listed in "PRINTED WIRING BOARD PARTS LIST". For its mounting location, refer to "ADJUSTMENT LOCATIONS".

2. PROCEDURE FOR REPLACING MEMORY IC

(1) Power off

Switch the power off and unplug the power cord from the wall outlet.

(2) Replacing the memory IC

Replace the memory IC with new one. Be sure to use the memory IC written with the initial data values.

(3) Power on

Plug the power cord into the wall outlet and switch the power on.

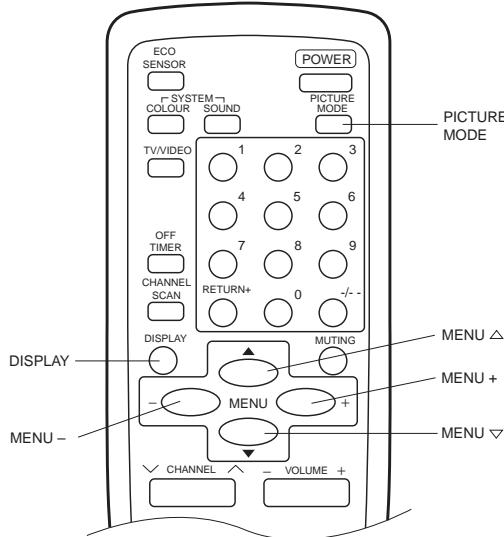
(4) Check and setting of SYSTEM CONSTANT SET:

- 1) Press the DISPLAY key and the PICTURE MODE key on the remote control unit simultaneously. The SERVICE MENU screen will be displayed. (See Fig. 1.)
- 2) In the SERVICE MENU, press the DISPLAY key and PICTURE MODE key simultaneously. Then, the SYSTEM CONSTANT SET screen will be displayed. (See Fig. 2.)
- 3) Check whether the setting values of the SYSTEM CONSTANT SET are the same as those indicated in Table 1. If the value is different, select the setting item with the MENU ∇/Δ key, and set the correct value with the MENU $-/+$ key.
- 4) Press the DISPLAY key twice to return to the normal screen.

(5) Receive channel setting

Refer to the **OPERATING INSTRUCTIONS** and set the receive channels (channels preset).

NAME OF REMOTE CONTROL KEYS



(6) User setting

Check the user setting values in Table 2, and if setting value is different, set the correct value.

For setting, refer to the **OPERATING INSTRUCTIONS**.

(7) Setting of SERVICE MENU

Verify the setting for each setting item in the SERVICE MENU. (See Table 3.) If readjustment is necessary, perform adjustment referring to "SERVICE ADJUSTMENTS".

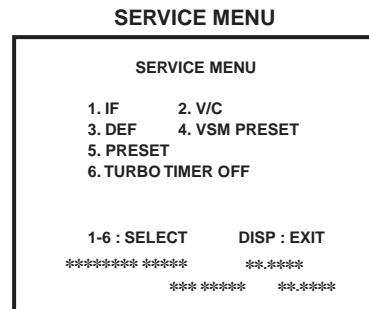


Fig. 1

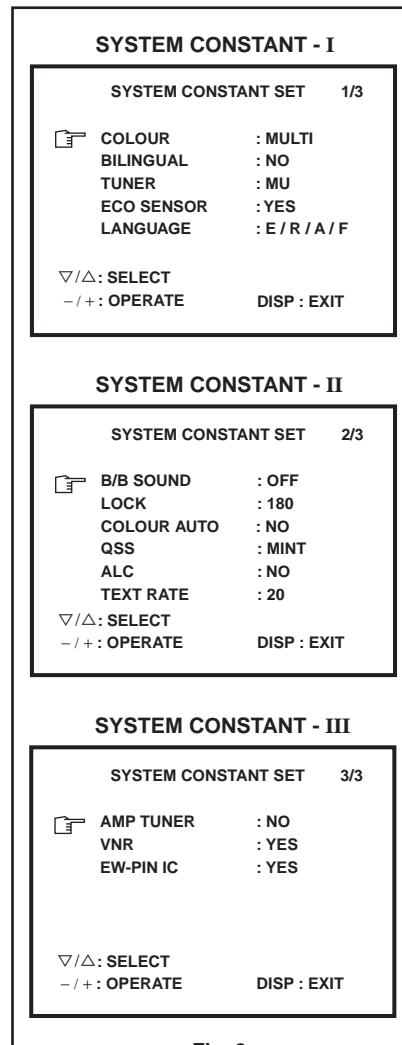


Fig. 2 -

SETTING OF SYSTEM CONSTANT SET

Table 1

Setting item	Setting contents	Setting value
COLOUR	► MULTI. ► TRIPLE ► PAL	MULTI
BILINGUAL	► YES ► NO	NO
TUNER	► MU ► MA	MU
ECO SENSOR	► YES ► NO	YES
LANGUAGE	► E/R/A/F ► E/A/F ► E/A ► E/F	E/R/A/F
B/B SOUND	► ON ► OFF	OFF
LOCK	YES ◀▶ 10 ◀▶ 20 ◀▶ ... ◀▶ 230 ◀▶ 250 ◀▶ 240 ◀▶	180
COLOUR AUTO	► YES ► NO	NO
QSS	► MINT ► MQSS	MINT
ALC	► YES ► NO	NO
TEXT RATE	10 ◀▶ 20 ◀▶ 40 ◀▶ 80	20
AMP TUNER	► YES ► NO	NO
VNR	► YES ► NO	YES
EW-PIN IC	► YES ► NO	YES

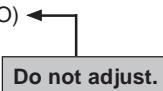
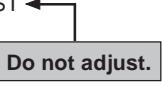
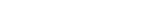
USER SETTING VALUES

Table 2

Setting item	Setting value	Setting item	Setting value
SUB POWER	ON	PICTURE MODE (VSM)	BRIGHT
CHANNEL POSITION	1 POSITION	VNR	OFF
CHANNEL PRESET	Refer to OPERATING INSTRUCTION	OFF TIMER	OFF
		LANGUAGE	ENGLISH
VOLUME	Appropriate sound volume	AUTO SHUTOFF	OFF
TV/VIDEO	TV	ECO SENSOR	OFF
ON SCREEN DISPLAY	POSITION NUMBER DISPLAY	BLUE BACK	OFF
COLOUR SYSTEM	AUTO PAL	ON TIMER	PR1 0:00
SOUND SYSTEM	B / G	CHILD LOCK	OFF

SERVICE MENU SETTING ITEMS

Table 3

Service menu	Setting item	Service menu	Setting item
1. IF	1. VCO 2. DELAY POINT	5. PRESET	1. C-TRAP FIX 2. SHARP PEAK 3. ABL 4. GAMMA 5. Y.DELAY TIME 6. BLACK EXP START 7. C-BPF 8. CW/SCP 9. V.IF DET. LEVEL 10. S.IF DET. LEVEL 11. IF AGC MIN. 12. V.IF AGC 13. V.IF PMOD 14. S.IF BPF BW ADJUST 15. S.IF TRAP FO ADJUST 16. S.IF TRAP FO ADJUST 2 17. S.IF-TRAP 18. S.IF-BPF 19. VNR 20. RGB LIM. 21. RGB LIMIT LEVEL 22. S.IF SW 23. TEXT H. POSITION 24. READ DATA
2. V / C	1. CUTOFF(R/G/B) 2. DRIVE(R/B) 3. BRIGHT 4. CONT. 5. COLOUR (P / S/ N3 / N4) 6. TINT (N3 / N4) 7. SECAM BL ADJ 8. SHARP (TV / VIDEO) 	5. PRESET	
3. DEF	1. VER. POSITION 2. HOR. POSITION 3. VER. HEIGHT 4. VER. LINEARITY 5. VER. SCURVE 6. HOR. VCO ADJUST  7. HOR. WIDTH  8. EW-PIN 9. EW-CORNER 10. TRAPEZ 11. VER. EDGE  12. HOR. COMP  13. VER. POS2 	6. TURBO TIMER	ON/OFF Should be set to OFF. (When you turn the TV power off, the Turbo Timer is automatically set to OFF.)
4. VSM PRESET (BRIGHT/STD/SOFT)	TINT  COLOUR  BRIGHT  CONT.  SHARP 		

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

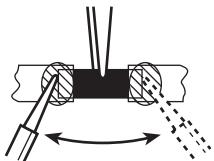
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30W soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

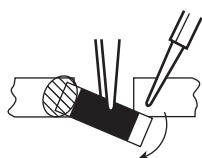
1. How to remove Chip parts

● Resistors, capacitors, etc.

- (1) As shown in the figure, while pushing the chip part with tweezers, alternately melt the solder at its each end.

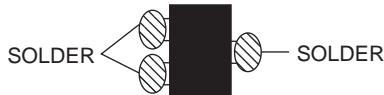


- (2) Shift the chip part with tweezers and remove it.



● Transistors, diodes, variable resistors, etc.

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, while pushing the chip part with tweezers, alternately melt the solder at its each lead. Then, shift and remove the chip part.

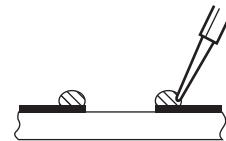


Note : After removing the part, remove remaining solder from the pattern.

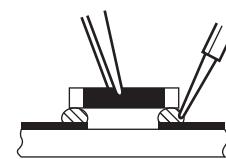
2. How to install Chip parts

● Resistors, capacitors, etc.

- (1) Apply solder to the pattern as indicated in the figure.

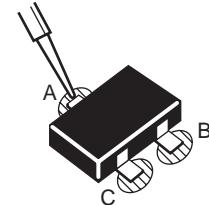


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

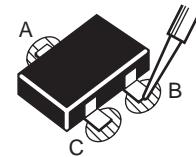


● Transistors, diodes, variable resistors, etc.

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead A as indicated in the figure.



- (4) Then solder leads B and C.



SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. There are 2 ways for adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.
2. The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the TV and measuring instrument for warming up for at least 30 minutes before starting adjustment.
5. If the receive or input signal is not specified, use the most appropriate signal for adjustment.
6. Never touch parts (such as variable resistors, transformers and capacitors) not shown in the adjustment items of this service adjustment.
7. Preparation for adjustment (presetting):
Unless otherwise specified in the adjustment items, preset the following functions with the remote control unit.

Function	Setting value
PICTURE MODE (VSM)	BRIGHT
COLOUR/BRIGHT/CONT./SHARP	See "VSM Preset" on page 23.
VNR	OFF
OFF TIMER	OFF
ECO SENSOR	OFF
BLUE BACK	OFF

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or Digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator)
[PAL / SECAM / NTSC]
4. Remote control unit

ADJUSTMENT/CHECK ITEMS

Adjustment/Check item	Page
B1 POWER SUPPLY Check	14
FOCUS Adjustment	14
IF CIRCUIT Adjustment	14
V/C (VIDEO/CHROMA) CIRCUIT Adjustment	15
DEFLECTION CIRCUIT Adjustment	20
VSM PRESET Adjustment	23
PRESET Adjustment	24
PURITY, CONVERGENCE Adjustment	25

BASIC OPERATION IN SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the remote control unit.

2. SERVICE MENU ITEMS

With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of settings:

- 1. IF For entering/adjusting the setting values (adjustment values) of the IF circuit.
- 2. V/C For entering/adjusting the setting values (adjustment values) of the VIDEO/CHROMA circuit.
- 3. DEF For entering/adjusting the setting values (adjustment values) of the DEFLECTION circuit.
- 4. VSM PRESET For setting the values of STANDARD, SOFT and BRIGHT. (Do not adjust the preset values.)
(VSM: video status memory)
- 5. PRESET For setting the values for VIDEO/CHROMA control. (Do not adjust the preset values.)
- 6. TURBO TIMER For quick setting the values of TIMER COUNT — adjustable not only by minutes but also by second. If it is ON, the time in TIMER mode changes from 1 minute into 1 second temporarily. (Applicable to OFF TIMER, ON TIMER and AUTO SHUTOFF)

Note: When you turn the TV power off, the Turbo Timer is automatically set to OFF.

3. BASIC OPERATION IN SERVICE MENU

(1) How to enter SERVICE MENU

Press the DISPLAY key and the PICTURE MODE key on the remote control unit simultaneously. The SERVICE MENU screen will be displayed. (See Fig. 1.)

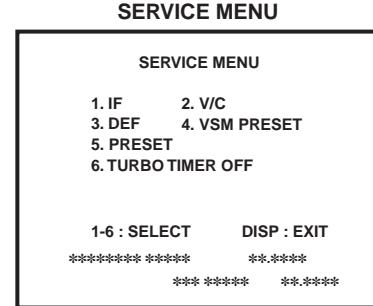


Fig. 1

(2) Selection of SUB MENU SCREEN

Press one of the keys 1 ~ 6 on the remote control unit, and select the SUB MENU SCREEN from the SERVICE MENU. (See Fig. 2 on the next page.)

SERVICE MENU → SUB MENU

- 1. IF
- 2. V / C
- 3. DEF
- 4. VSM PRESET
- 5. PRESET
- 6. TURBO TIMER

(3) Method of Setting

*Once the setting values are set, they are memorized automatically.

*It must not adjust without inputting a signal.

1) 1. IF

[1. VCO]

- (a) 1 Key Select 1. IF.
- (b) 1 Key Select 1. VCO. (CW)
- (c) VCO(CW) Adjust VCO(CW) while watching the colour (yellow/blue) of the characters on the screen.
For details, refer to the adjustment table.
- (d) DISPLAY Key When this is pressed twice, you will return to the SERVICE MENU.

[2. DELAY POINT]

- (a) 1 Key Select 1. IF.
- (b) 2 Key Select 2. DELAY POINT.
- (c) MENU - / + Key Adjust the setting value.
- (d) DISPLAY Key When this is pressed twice, you will return to the SERVICE MENU.

2) 2. V/C, 3. DEF, 4. VSM PRESET and 5. PRESET

Note: Do not adjust "4. VSM PRESET" and "5. PRESET" unless you had changed its value by mistake.

- (a) 2 ~ 5 Keys Select one from 2. V/C, 3. DEF, 4. VSM PRESET and 5. PRESET.
- (b) MENU ∇ / Δ key Select setting items.
- (c) MENU - / + Key Adjust the setting values of the setting items.
 - Use the number keys on the remote control unit for setting of WHITE BALANCE and BLACK OFFSET. For the setting, refer to each item concerned.
- (d) DISPLAY Key When this is pressed, you will return to the SERVICE MENU.

3) 6. TURBO TIMER

- (a) 6 Key Each time you press the key, ON/OFF state of TURBO TIMER changes.
(Should be set to OFF.)

(4) Release of SERVICE MENU

After completing the setting, return to the SERVICE MENU by pressing the DISPLAY key, then again press the DISPLAY key to return to the normal screen.

SUB MENU SCREEN

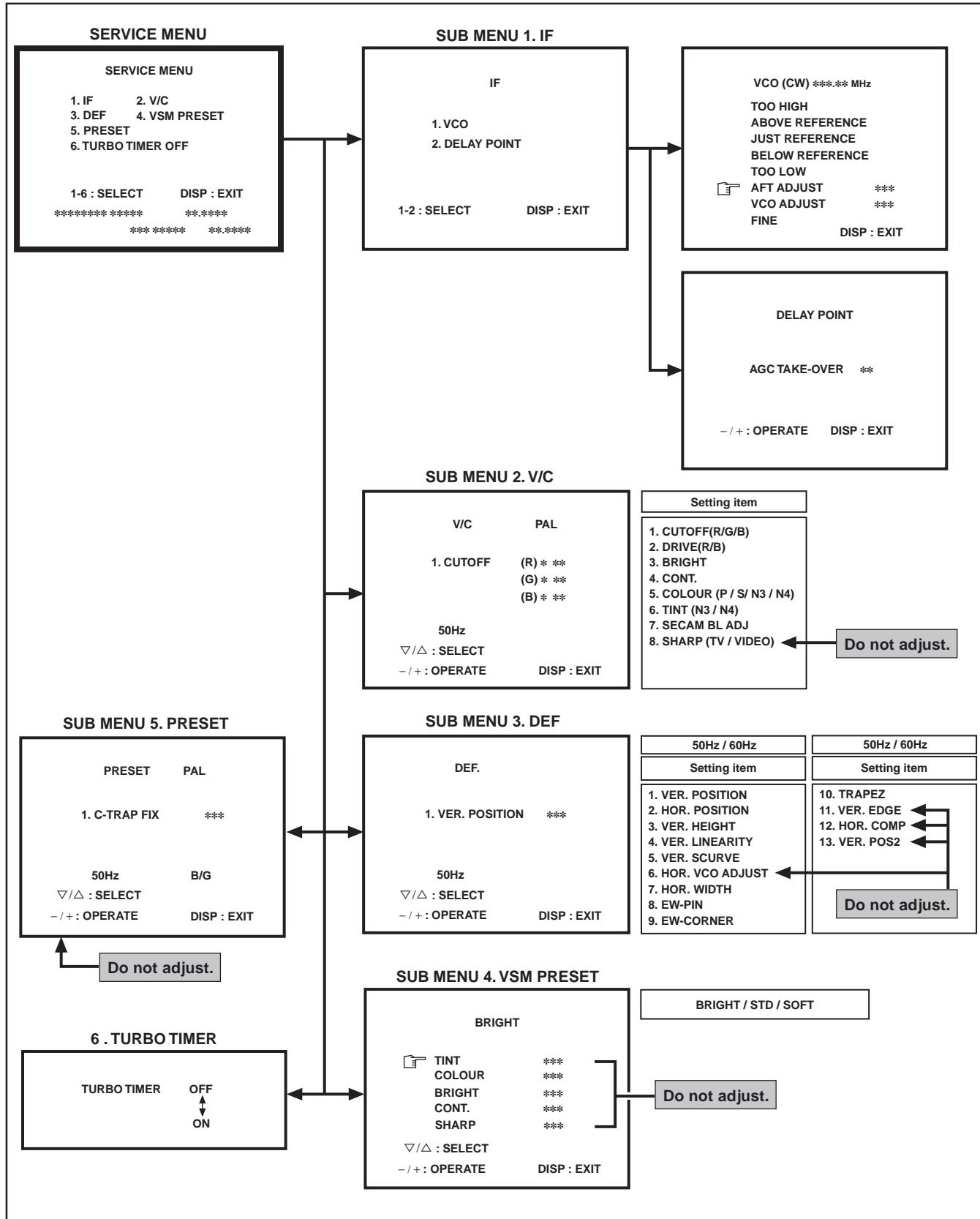
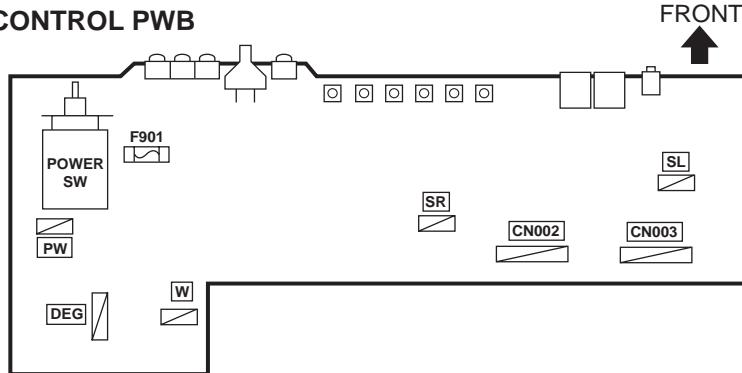


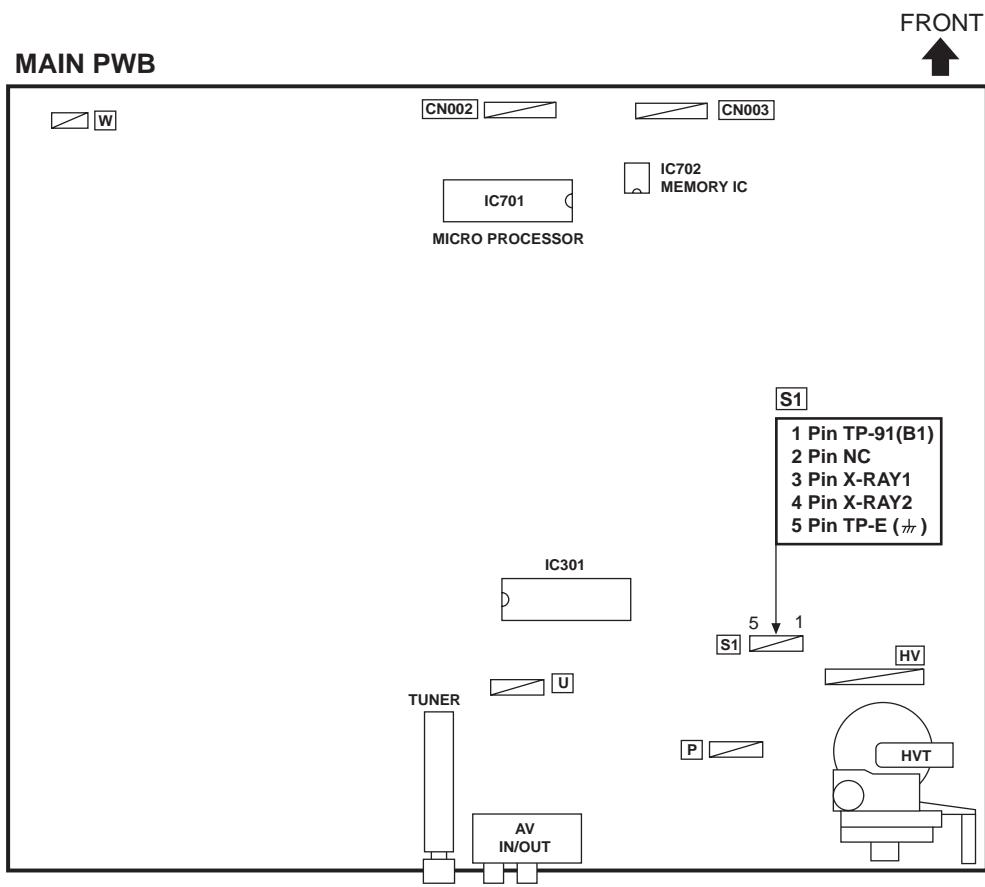
Fig. 2

ADJUSTMENT LOCATIONS

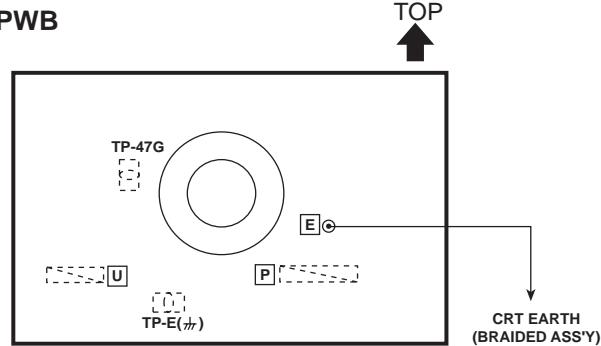
FRONT CONTROL PWB



MAIN PWB



CRT SOCKET PWB
(SOLDER SIDE)



ADJUSTMENTS

B1 POWER SUPPLY

Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 POWER SUPPLY	● Signal Generator ● DC Voltmeter	TP-91 (B1) TP-E (↙) [S1 connector]		<ol style="list-style-type: none"> 1. Receive a whole black signal. 2. Connect a DC voltmeter between TP-91 (B1) and TP-E (↙) (between pins 1 and 5 of the connector S1). 3. Make sure that the voltage is DC135.0 ± 1.5V.

FOCUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of FOCUS	Signal generator		FOCUS VR [In HVT]	<ol style="list-style-type: none"> 1. Receive a cross-hatch signal. 2. While watching the screen, adjust the FOCUS VR to make the vertical and horizontal lines as fine and sharp as possible. 3. Make sure that, when the screen is darkened, the lines remain in good focus.

IF CIRCUIT ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VCO (CW)	Remote control unit		VCO (CW)	<p>● Under normal conditions, no adjustment is required. Note: Do not adjust without inputting signal.</p> <ol style="list-style-type: none"> 1. Receive a colour bar signal. 2. Select 1. IF from the SERVICE MENU. 3. Press the 1 key to select 1. VCO. 4. Select VCO ADJUST with the MENU ∇/Δ key and make sure that the setup value shown in the screen is +00. 5. Press the MENU – or + key until the colour of the characters "TOO HIGH" displayed on the screen changes from blue to yellow. 6. Press the MENU – or + key until the colour of the characters "TOO LOW" displayed on the screen changes from blue to yellow. At this time, check that the value of VCO ADJUST on the screen is +00 or about +00. 7. Select AFT ADJUST with the MENU ∇/Δ key. 8. Then, press the MENU – or + key until the colour of the characters "JUST REFERENCE" displayed on the screen changes from blue to yellow. 9. Press the DISPLAY key three times to return to normal screen. <p>Do not adjust.</p>

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of DELAY POINT	Remote control unit		DELAY POINT (AGC TAKE-OVER)	<ol style="list-style-type: none"> 1. Receive a black and white signal (colour off). 2. Select 1. IF from the SERVICE MENU. 3. Select 2. DELAY POINT by pressing the 2 key on the remote control. 4. Adjust the MENU – or + key until video noise disappears. 5. Press the DISPLAY key three times to return to the normal screen. 6. Turn to other channels and make sure that there are no irregularities.
Setting (Adjustment) Item		Variable range	Initial setting value	
DELAY POINT (AGC TAKE-OVER)		0 ~ 127	48	
Others			43	

V/C (VIDEO/CHROMA) CIRCUIT ADJUSTMENT

The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.

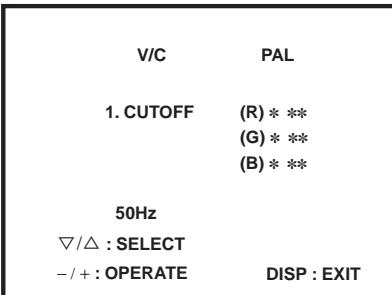
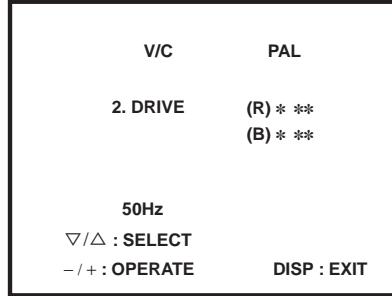
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.

- Do not change the initial setting values of the setting (adjustment) items not listed in "ADJUSTMENT".

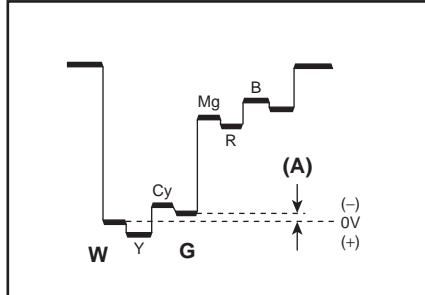
[SUB MENU 2. V/C]

Setting item	Colour system	Variable range	Initial setting value			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
1. CUT OFF (R / G / B)		-128 ~ +127	-50	←	←	←
2. DRIVE (R / B)		-64 ~ +63	0	←	←	←
3. BRIGHT		-128 ~ +127	0	←	←	←
4. CONT.		-64 ~ +63	0	←	←	←
5. COLOUR (P / S / N3 / N4)		-64 ~ +63	0	←	←	←
6. TINT (N3 / N4)	TV / VIDEO	-64 ~ +63	—	—	0 / 0	0 / 0
7. SECAM BL ADJUST		-32 ~ +31	0	←	←	←
8. SHARP	TV / VIDEO	-32 ~ +31	-14 / +8	←	←	←

 : Do not adjust.

Item	Measuring instrument	Test point	Adjustment part	Description													
Adjustment of WHITE BALANCE (Low light)	● Signal generator ● Remote control unit		1. CUTOFF (R) CUTOFF (G) CUTOFF (B) SCREEN VR (In HVT)	<ol style="list-style-type: none"> Receive a black and white signal (colour off). Select 2. V/C from the SERVICE MENU. Select 1. CUTOFF (R), (G) and (B) with the MENU ∇/Δ key, and set each value to initial setting value with 4 ~ 9 keys on the remote control unit. Press the 1 key on the remote control unit to produce a single horizontal line. Turn the SCREEN VR fully counterclockwise, then slowly turn it clockwise to where a red, blue, or green colour is faintly visible. Use keys 4 ~ 9 on the remote control unit and adjust the other 2 colours to where the single horizontal line appears white. Turn the SCREEN VR to where the single horizontal line glows faintly. Press the 2 key to return to 1. CUTOFF screen. Press the DISPLAY key twice to return to the normal screen. 													
				<table border="1"> <thead> <tr> <th>Setting (Adjustment) item</th><th>Variable range</th><th>Initial setting value</th></tr> </thead> <tbody> <tr> <td rowspan="3">1. CUT OFF</td><td>R</td><td>-128 ~ +127</td><td>-50</td></tr> <tr> <td>G</td><td>-128 ~ +127</td><td>-50</td></tr> <tr> <td>B</td><td>-128 ~ +127</td><td>-50</td></tr> </tbody> </table>	Setting (Adjustment) item	Variable range	Initial setting value	1. CUT OFF	R	-128 ~ +127	-50	G	-128 ~ +127	-50	B	-128 ~ +127	-50
Setting (Adjustment) item	Variable range	Initial setting value															
1. CUT OFF	R	-128 ~ +127	-50														
	G	-128 ~ +127	-50														
	B	-128 ~ +127	-50														
Adjustment of WHITE BALANCE (High light)	● Signal generator ● Remote control unit		2. DRIVE (R) DRIVE (B)	<ol style="list-style-type: none"> Receive a black and white signal (colour off). Select 2. V/C from the SERVICE MENU. Select 2. DRIVE (R) / (B) with MENU ∇/Δ key, and set each value to initial setting value with 4 and 7 keys, or 6 and 9 keys on the remote control unit. Use the keys 4 and 7 or 6 and 9 to produce a white screen. Press the DISPLAY key twice to return to the normal screen. 													
				<table border="1"> <thead> <tr> <th>Setting (Adjustment) item</th><th>Variable range</th><th>Initial setting value</th></tr> </thead> <tbody> <tr> <td rowspan="2">2. DRIVE</td><td>R</td><td>-64 ~ +63</td><td>0</td></tr> <tr> <td>B</td><td>-64 ~ +63</td><td>0</td></tr> </tbody> </table>	Setting (Adjustment) item	Variable range	Initial setting value	2. DRIVE	R	-64 ~ +63	0	B	-64 ~ +63	0			
Setting (Adjustment) item	Variable range	Initial setting value															
2. DRIVE	R	-64 ~ +63	0														
	B	-64 ~ +63	0														

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB BRIGHT	Remote control unit		3. BRIGHT	<ol style="list-style-type: none"> 1. Receive any broadcast. 2. Select 2. V/C from the SERVICE MENU. 3. Select 3. BRIGHT with the MENU ∇/Δ key. 4. Set the initial setting value with the MENU – or + key. 5. If the brightness is not the best with the initial set value, make fine adjustment until you get the best brightness. 6. Press the DISPLAY key twice to return to the normal screen.
Adjustment of SUB CONT.	Remote control unit		4. CONT.	<ol style="list-style-type: none"> 1. Receive any broadcast. 2. Select 2. V/C from the SERVICE MENU. 3. Select 4. CONT. with the MENU ∇/Δ key. 4. Set the initial setting value with the MENU – or + key. 5. If the contrast is not the best with the initial set value, make fine adjustment until you get the best contrast. 6. Press the DISPLAY key twice to return to the normal screen.
Adjustment of SUB COLOUR-I	Remote control unit		5. COLOR	[Method of adjustment without measuring instrument]
			PAL COLOUR	<p>(PAL COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a PAL broadcast. 2. Select 2. V/C from the SERVICE MENU. 3. Select 5. COLOUR with the MENU ∇/Δ key. 4. Set the initial setting value for PAL COLOUR with the MENU – or + key. 5. If the colour is not the best with the initial set value, make fine adjustment until you get the best colour. 6. Press the DISPLAY key twice to return to the normal screen.
			SECAM COLOUR	<p>(SECAM COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a SECAM broadcast. 2. Make fine adjustment of SECAM COLOUR in the same way as for "PAL COLOUR".
			NTSC 3.58 COLOUR	<p>(NTSC 3.58 COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a NTSC 3.58MHz broadcast. 2. Make similar fine adjustment of NTSC 3.58 COLOUR in the same way as for "PAL COLOUR".
				<p>(NTSC 4.43 COLOUR)</p> <p>When adjustment is done for NTSC 3.58 COLOUR, appropriate values are automatically set for NTSC 4.43 COLOUR.</p>

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR-II	● Signal generator ● Oscillo-scope ● Remote control unit	TP-47G TP-E (↓) [CRT SOCKET PWB]	5. COLOUR	[Method of adjustment using measuring instrument]
			PAL COLOUR	<p>(PAL COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a PAL full field colour bar signal (75% white). 2. Select 2. V/C from the SERVICE MENU. 3. Select 5. COLOUR with the MENU ∇/Δ key. 4. Set the initial setting value of PAL COLOUR with the MENU – or + key. 5. Connect the oscilloscope between TP-47G and TP-E. 6. Adjust PAL COLOUR to set the value (A) in the figure to +12V (W & G).
				<p>(SECAM COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a SECAM full field colour bar signal (75% white). 2. Set the initial setting value of SECAM COLOUR with the MENU – or + key. 3. Adjust SECAM COLOUR to set the value (A) in the figure to +13V (W & G).
				<p>(NTSC 3.58 COLOUR)</p> <ol style="list-style-type: none"> 1. Receive a NTSC 3.58 full field colour bar signal (75% white). 2. Set the initial setting value of NTSC 3.58 COLOUR with the MENU – or + key. 3. Adjust NTSC 3.58 COLOUR to set the value (A) in the figure to +8V (W & G).
				<p>(NTSC 4.43 COLOUR)</p> <p>When adjustment is done for NTSC 3.58 COLOUR, appropriate values are automatically set for NTSC 4.43 COLOUR.</p>
Adjustment of SUB TINT-I	Remote control unit		6. TINT	[Method of adjustment without measuring instrument]
				<p>(NTSC 3.58 TINT)</p> <ol style="list-style-type: none"> 1. Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). 2. Select 2. V/C from the SERVICE MENU. 3. Select 6. TINT with the MENU ∇/Δ key. 4. Set the initial setting value of NTSC 3.58 with the MENU – or + key. 5. If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint. 6. Press the DISPLAY key twice to return to the normal screen.
				<p>(NTSC 4.43 COLOUR)</p> <p>When adjustment is done for NTSC 3.58 TINT, appropriate values are automatically set for NTSC 4.43 TINT.</p>

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB TINT-II	● Signal generator ● Oscillo-scope ● Remote control unit	TP-47G TP-E (L) [CRT SOCKET PWB]	6. TINT	<p>[Method of adjustment using measuring instrument]</p> <p>NTSC 3.58 TINT</p> <p>(NTSC 3.58 TINT)</p> <ol style="list-style-type: none"> Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). Select 2. V/C from the SERVICE MENU. Select 6. TINT with the MENU a key. Set the initial setting value of NTSC 3.58 with the MENU - or + key. Connect the oscilloscope between TP-47G and TP-E. Adjust NTSC 3.58 TINT to set the value (B) in the figure to +5V (W & Cy). Press the DISPLAY key twice to return to the normal screen. <p>(NTSC 4.43 TINT)</p> <p>When adjustment is done for NTSC 3.58 TINT, appropriate values are automatically set for NTSC 4.43 TINT.</p>
Adjustment of BLACK OFFSET (SECAM)	Remote control unit		7. SECAM BL ADJUST	<p>[Method of adjustment without measuring instrument]</p> <ol style="list-style-type: none"> Receive a SECAM HALF COLOUR BAR signal (210.25MHz). Select 2. V/C from the SERVICE MENU. Select 7. SECAM BL ADJUST with the MENU a key. Set the initial setting value the MENU - or + key. While alternately pressing keys 1 (Black & White ON) and 2 (Black & White OFF), make sure that there is no colour on the black & white screen. If the black & white screen is not the best with the initial setting value, make fine adjustment until you get the best black & white screen. Press the DISPLAY key twice to return to the normal screen.

DEFLECTION CIRCUIT ADJUSTMENT

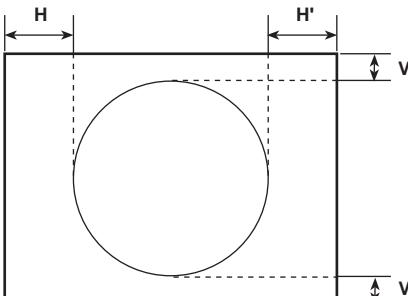
- There are 2 modes of adjustment (initial setting value) — 50Hz mode and 60Hz mode — depending upon the kind of signals (vertical frequency 50Hz / 60Hz).
- When adjusted in 50Hz mode, 60Hz mode will be automatically set.

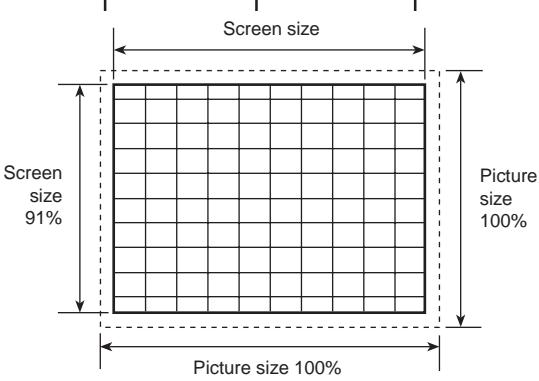
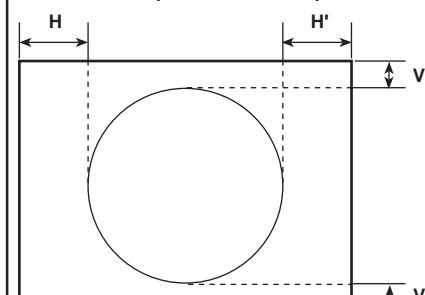
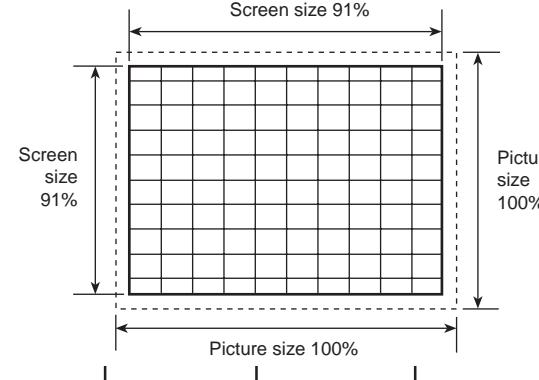
The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.

[SUB MENU 3. DEF]

Setting item	Adjustment name	Variable range	Initial setting value	
			50Hz	60Hz
1. VER. POSITION	Vertical center	-4 ~ +3	-2	-2
2. HOR. POSITION	Horizontal center	-16 ~ +15	-1	+1
3. VER. HEIGHT	Vertical height	-64 ~ +63	+13	-2
4. VER. LINEARITY	Vertical linearity	-16 ~ +15	+7	0
5. VER. SCURVE	Vertical scurve	-16 ~ +15	-5	0
6. HOR. VCO ADJUST	Horizontal VCO	-64 ~ +63	0	0
7. HOR. WIDTH	Horizontal width	-32 ~ +31	-1	-5
8. EW-PIN	Side pin correction	-32 ~ +31	-5	0
9. EW-CORNER	Side pin fore correction	-8 ~ +7	-3	+2
10. TRAPEZ	Trapezoidal distortion correction	-32 ~ +31	-13	-5
11. VER. EDGE	Vertical edge correction	-8 ~ +7	0	0
12. HOR. COMP	Horizontal compensation	-8 ~ +7	-2	-2
13. VER. POS2	Vertical center 2	-4 ~ +3	0	0

: Do not adjust.

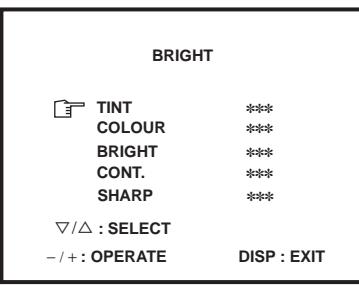
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V-POSITION	<ul style="list-style-type: none"> Signal generator Remote control unit 		1. VER. POSITION	<p>[fv : 50Hz mode]</p> <ol style="list-style-type: none"> Receive a circle pattern signal. Select 3. DEF from the SERVICE MENU. Select 1. VER. POSITION with the MENU ∇/Δ key. Set the initial setting value of 1. VER. POSITION with the MENU $-/+$ key. Adjust VER. POSITION to make $V = V'$. <p>(to be continued)</p> 

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V-HEIGHT			3. VER. HEIGHT	<p>6. Receive a cross-hatch signal.</p> <p>7. Select 3. VER. HEIGHT with the MENU ∇/Δ key.</p> <p>8. Set the initial setting value of 3. VER. HEIGHT with the MENU $-/+$ key.</p> <p>9. Adjust VER. HEIGHT and make the vertical screen size 91% of the picture size with the MENU $-/+$ key.</p>
				
Adjustment of H-POSITION			2. HOR. POSITION	<p>10. Receive a circle pattern signal.</p> <p>11. Select 2. HOR. POSITION with the MENU ∇/Δ key.</p> <p>12. Set the initial setting value of 2. HOR. POSITION with the MENU $-/+$ key.</p> <p>13. Adjust HOR. POSITION to make $H = H'$ with the MENU $-/+$ key.</p>
				
Adjustment of H-WIDTH			7. HOR. WIDTH	<p>14. Receive a cross-hatch signal.</p> <p>15. Select 7. HOR. WIDTH with the MENU ∇/Δ key.</p> <p>16. Set the initial setting value of 7. HOR. WIDTH with the MENU $-/+$ key.</p> <p>17. Adjust HOR. WIDTH and make the horizontal screen size 91% of the picture size with the MENU $-/+$ key.</p> <p>(to be continued)</p>
				

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of EW-PIN		Straight	8. EW-PIN	<p>18. Select 8. EW-PIN with the MENU ∇/Δ key.</p> <p>19. Set the initial setting value of 8. EW-PIN with the MENU $-/+$ key.</p> <p>20. Adjust EW-PIN so that the first vertical lines at the left and right edges on the screen are straight.</p>
Adjustment of TRAPEZ		Parallel	10. TRAPEZ	<p>21. Select 10. TRAPEZ with the MENU ∇/Δ key.</p> <p>22. Set the initial setting value of 10. TRAPEZ with the MENU $-/+$ key.</p> <p>23. Adjust TRAPEZ so that the vertical lines at the left and right edges on the screen are in parallel.</p>
Adjustment of V-LINEARITY & V-SCURVE			4. VER. LINEARITY 5. VER. SCURVE	<ul style="list-style-type: none"> ● When the vertical linearity has been deteriorated remarkably, perform the following steps. <p>24. Receive a cross-hatch signal.</p> <p>25. Select 4. VER. LINEARITY with the MENU ∇/Δ key.</p> <p>26. Set the initial setting value of 4. VER. LINEARITY with the MENU $-/+$ key.</p> <p>27. Select 5. VER. SCURVE with the MENU ∇/Δ key.</p> <p>28. Set the initial setting value of 5. VER. SCURVE with the MENU $-/+$ key.</p> <p>29. Adjust VER. LINEARITY and VER. SCURVE so that the spaces of each line on TOP, CENTER and BOTTOM become uniform.</p>
Adjustment of EW-CORNER			9. EW-CORNER	<ul style="list-style-type: none"> ● Observe the vertical lines at the four corners on the screen. If they are not straight, correct them by performing the following steps. <p>30. Select 9. EW-CORNER with the MENU ∇/Δ key.</p> <p>31. Set the initial setting value of 9. EW-CORNER with the MENU $-/+$ key.</p> <p>32. Adjust EW-CORNER so that the vertical lines at the four corners on the screen are straight.</p> <p>(to be continued)</p>

Item	Measuring instrument	Test point	Adjustment part	Description
				<p>33. Make sure that the adjustment is properly done on the screen of 60Hz mode.</p> <p>34. Press the DISPLAY key twice to return to the normal screen.</p> <p>[NOTE]</p> <ul style="list-style-type: none"> ● When adjust in 60Hz mode, only 60Hz mode is adjust.

VSM PRESET ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description																								
Setting of VSM PRESET	Remote control unit		TINT COLOUR BRIGHT CONT. SHARP	<p>(VSM PRESET)</p> <ol style="list-style-type: none"> 1. Select 4. VSM PRESET from the SERVICE MENU. 2. Select BRIGHT with the PICTURE MODE key. 3. Adjust the MENU ∇/Δ key and MENU – or + key to reset the set values of TINT ~ SHARP to the values shown in the table. 4. Respectively select the VSM PRESET mode for SOFT and STANDARD, and make similar adjustment as in 3 above. 5. Press the DISPLAY key twice to return to the normal screen. <p>SUB MENU 4. VSM PRESET</p>  <p>[Setting Values for SUB MENU 4. VSM PRESET]</p> <table border="1"> <thead> <tr> <th>VSM preset mode Setting item</th> <th>BRIGHT</th> <th>STANDARD</th> <th>SOFT</th> </tr> </thead> <tbody> <tr> <td>TINT SETTING VALUE</td> <td>+15</td> <td>←</td> <td>←</td> </tr> <tr> <td>COLOUR SETTING VALUE</td> <td>+15</td> <td>←</td> <td>←</td> </tr> <tr> <td>BRIGHT SETTING VALUE</td> <td>+15</td> <td>←</td> <td>←</td> </tr> <tr> <td>CONT. SETTING VALUE</td> <td>+30</td> <td>+15</td> <td>+11</td> </tr> <tr> <td>SHARP SETTING VALUE</td> <td>+15</td> <td>←</td> <td>+12</td> </tr> </tbody> </table> <p>: Do not adjust.</p>	VSM preset mode Setting item	BRIGHT	STANDARD	SOFT	TINT SETTING VALUE	+15	←	←	COLOUR SETTING VALUE	+15	←	←	BRIGHT SETTING VALUE	+15	←	←	CONT. SETTING VALUE	+30	+15	+11	SHARP SETTING VALUE	+15	←	+12
VSM preset mode Setting item	BRIGHT	STANDARD	SOFT																									
TINT SETTING VALUE	+15	←	←																									
COLOUR SETTING VALUE	+15	←	←																									
BRIGHT SETTING VALUE	+15	←	←																									
CONT. SETTING VALUE	+30	+15	+11																									
SHARP SETTING VALUE	+15	←	+12																									

PRESET ADJUSTMENT

- No adjustment is necessary.
- Adjust only when you had changed the value by miss operation.

[SUB MENU 5. PRESET]

Colour system Setting item		Initial setting value			
		PAL	SECAM	NTSC 3.58	NTSC 4.43
1. C-TRAP FIX		1	←	←	←
2. SHARP PEAK		0	←	←	←
3. ABL		1	←	←	←
4. GAMMA		0	←	←	←
5. Y.DELAY TIME	TV	0	2	2	3
	VIDEO	0	2	0	2
6. BLACK EXP START		3	←	←	←
7. C-BPF	TV	1	←	0	←
	VIDEO	1	←	←	←
8. CW/SCP		0	←	←	←
9. V.IF DET. LEVEL		0	←	←	←
11. IF AGC MIN.		0	←	←	←
12. V.IF AGC		0	←	←	←
13. V.IF PMOD		0	←	←	←
19. VNR		15	←	←	←
20. RGB LIM.		1	←	←	←
21. RGB LIMIT LEVEL		2	←	←	←
23. TEXT H. POSITION		5	←	←	←
24. READ DATA		—	—	—	—

 : Do not adjust.

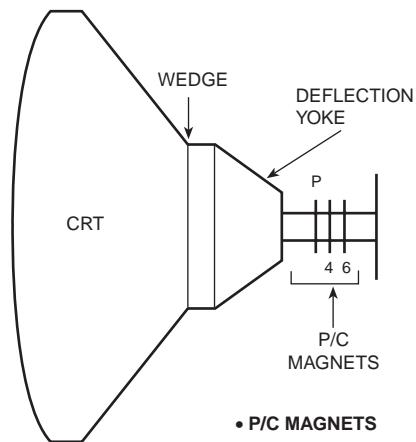
TV RF system Setting item		Initial setting value			
		B/G	I	D/K	M
10. S.IF DET. LEVEL		0	←	←	←
14. S.IF BPF BW ADJUST		0	←	←	←
15. S.IF TRAP FO ADJUST		0	←	←	←
16. S.IF TRAP FO ADJUST 2		0	←	←	←
17. S.IF-TRAP		0	←	←	←
18. S.IF-BPF		0	←	←	1
22. S.IF SW		1	←	←	0

 : Do not adjust.

PURITY, CONVERGENCE ADJUSTMENT

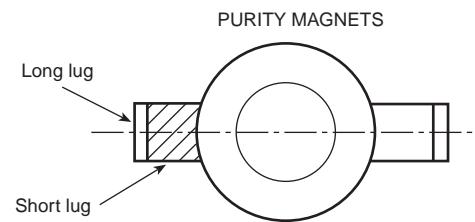
PURITY ADJUSTMENT

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges. (Fig. 1.)
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig. 2)
7. Adjust the gap between two lugs so that the green raster will come into the center of the screen. (Fig. 3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a cross-hatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS
 P : PURITY MAGNET
 4 : 4 POLES (convergence magnets)
 6 : 6 POLES (convergence magnets)

Fig. 1



Bring the long lug over the short lug and position them horizontally.

Fig. 2

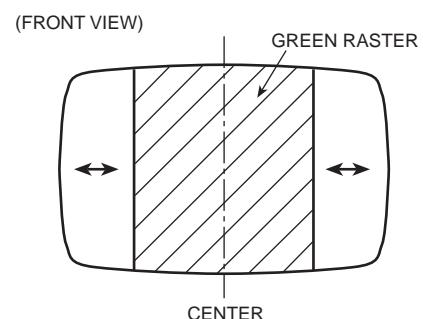


Fig. 3

STATIC CONVERGENCE ADJUSTMENT

1. Input a cross-hatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig. 1) to turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen to turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

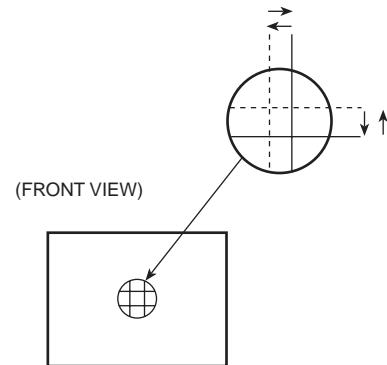


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the center. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

- After adjustment, fix the wedge at the original position. Fasten the retainer screw of the deflection yoke. Fix the PC magnets with glue.

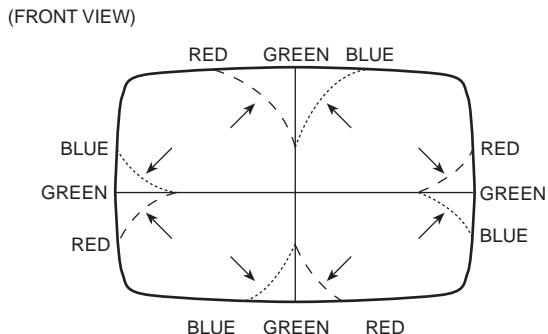


Fig. 2

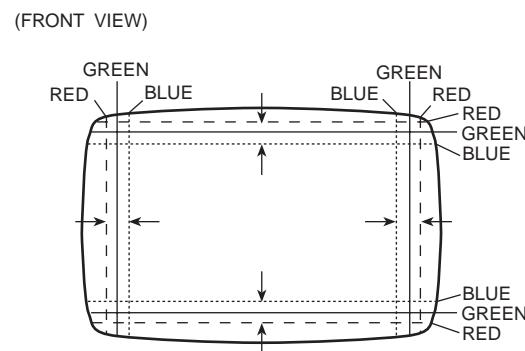


Fig. 3

SELF-CHECK FUNCTIONS

1. Outline

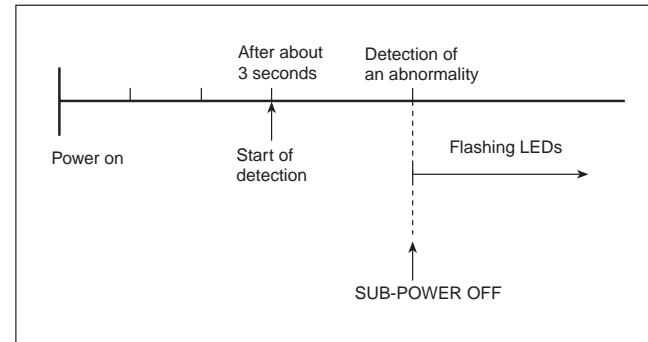
This model has self-check functions given below. When an abnormality has been detected, the SUB POWER is turned off and both POWER and ON TIMER LEDs flash to inform of the failure. An abnormality is detected by the signal input state of the control line connected to the microcomputer.

2. Self-check items

Check item	Details of detection	Method of detection	State of abnormality
Over-current protection	An over-current on the low B line is detected.	The main microcomputer detects the possible abnormality at 20-msec. intervals and judges the results in every 24 time. Of the 24 times, if NG is detected more than 13 times, it is judged that there is an abnormality.	When an abnormality has been detected, the SUB-POWER is turned off. While the SUB-POWER is being turned off, the POWER key on the remote control unit is not operational until the power cord is taken out and put in again.
CRT NECK protection	Operation of CRT NECK protection circuit	DITTO	DITTO

3. Self-check indicating function

When an abnormality has been detected at about 3 seconds after the power is turned on, the SUB POWER is turned off immediately and the POWER and ON TIMER LEDs flash.



[Indication by the LED]

Item	LED flashing intervals
Over-current and CRT NECK protection	At 0.24-second intervals



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AV21PM-H #3

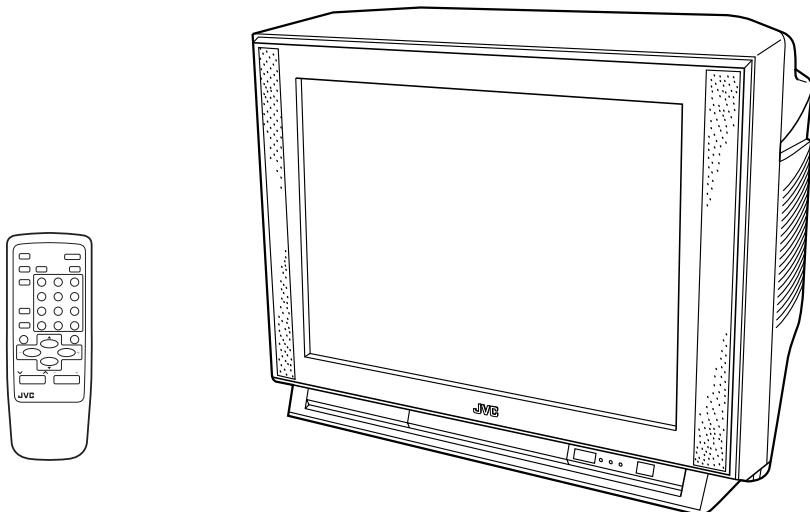
CTH 0008
CRT



SCHEMATIC DIAGRAMS

COLOUR TELEVISION

AV-21PM



■ APPLICABLE MODELS

This standard circuit diagram is applicable to the following models.

However, there will be differences between this model and the following applicable models. For the differences, please refer to "PARTS DIFFERENCE TABLE" in the service manual of the following applicable models.

Basic Model (this Model)	Applicable Models	
AV-21PM (Service Manual: No. 56055, Aug. 2000)	AV-21PM(-A)	(Service Manual: No. 56056, Aug. 2000)
	AV-21PM(AU)	(Service Manual: No. 56057, Aug. 2000)
	AV-21P7EE	(Service Manual: No. 56058, Aug. 2000)
	AV-21P4(BK)	(Service Manual: No. 56059, Aug. 2000)
	AV-21P7(PH)	(Service Manual: No. 56061, Aug. 2000)

STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the Δ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2. SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1) Input signal : Colour bar signal
- (2) Setting positions of each knob/button and variable resistor : Original setting position when shipped
- (3) Internal resistance of tester : DC 20k Ω /V
- (4) Oscilloscope sweeping time : H → 20 μ s/div
: V → 5mS/div
: Others → Sweeping time is specified.
- (5) Voltage values : All DC voltage values
* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3. INDICATION OF PARTS SYMBOL [EXAMPLE]

- In the PW board : R1209 → R209

4. INDICATIONS ON THE CIRCUIT DIAGRAM

(1) Resistors

● Resistance value

- No unit : [Ω]
- K : [k Ω]
- M : [M Ω]

● Rated allowable power

- No indication : 1/4 [W]
- Others : As specified

● Type

- No indication : Carbon resistor
- OMR : Oxide metal film resistor
- MFR : Metal film resistor
- MPR : Metal plate resistor
- UNFR : Non-flammable resistor
- FR : Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2) Capacitors

● Capacitance value

- 1 or higher : [pF]
- less than 1 : [μ F]

● Withstand voltage

- No indication : DC50 [V]
- AC indicated : AC withstand voltage [V]
- Others : DC withstand voltage [V]

* Electrolytic Capacitors

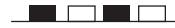
47/50 [Example]: Capacitance value [μ F]/withstand voltage [V]

- Type
 - No indication : Ceramic capacitor
 - MY : Mylar capacitor
 - MM : Metalized mylar capacitor
 - PP : Polypropylene capacitor
 - MPP : Metalized polypropylene capacitor
 - MF : Metallized film capacitor
 - TF : Thin film capacitor
 - BP : Bipolar electrolytic capacitor
 - TAN : Tantalum capacitor

(3) Coils

- No unit : [μ H]
- Others : As specified

(4) Power Supply

-  : B1
-  : 12V
-  : 9V
-  : 5V

* Respective voltage values are indicated.

(5) Test point

-  : Test point
-  : Only test point display

(6) Connecting method

-  : Connector
-  : Wrapping or soldering
-  : Receptacle

(7) Ground symbol

-  : LIVE side ground
-  : ISOLATED (NEUTRAL) side ground
-  : EARTH ground
-  : DIGITAL ground

5. NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (\perp) side GND and the ISOLATED (NEUTRAL) : ($\not\perp$) side GND. Therefore, care must be taken for the following points.

(1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED (NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused.

Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2) Do not short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

● Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

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CRT SOCKET PWB PATTERN **2-19**

SEMICONDUCTOR SHAPES

TRANSISTOR

BOTTOM VIEW	FRONT VIEW			TOP VIEW

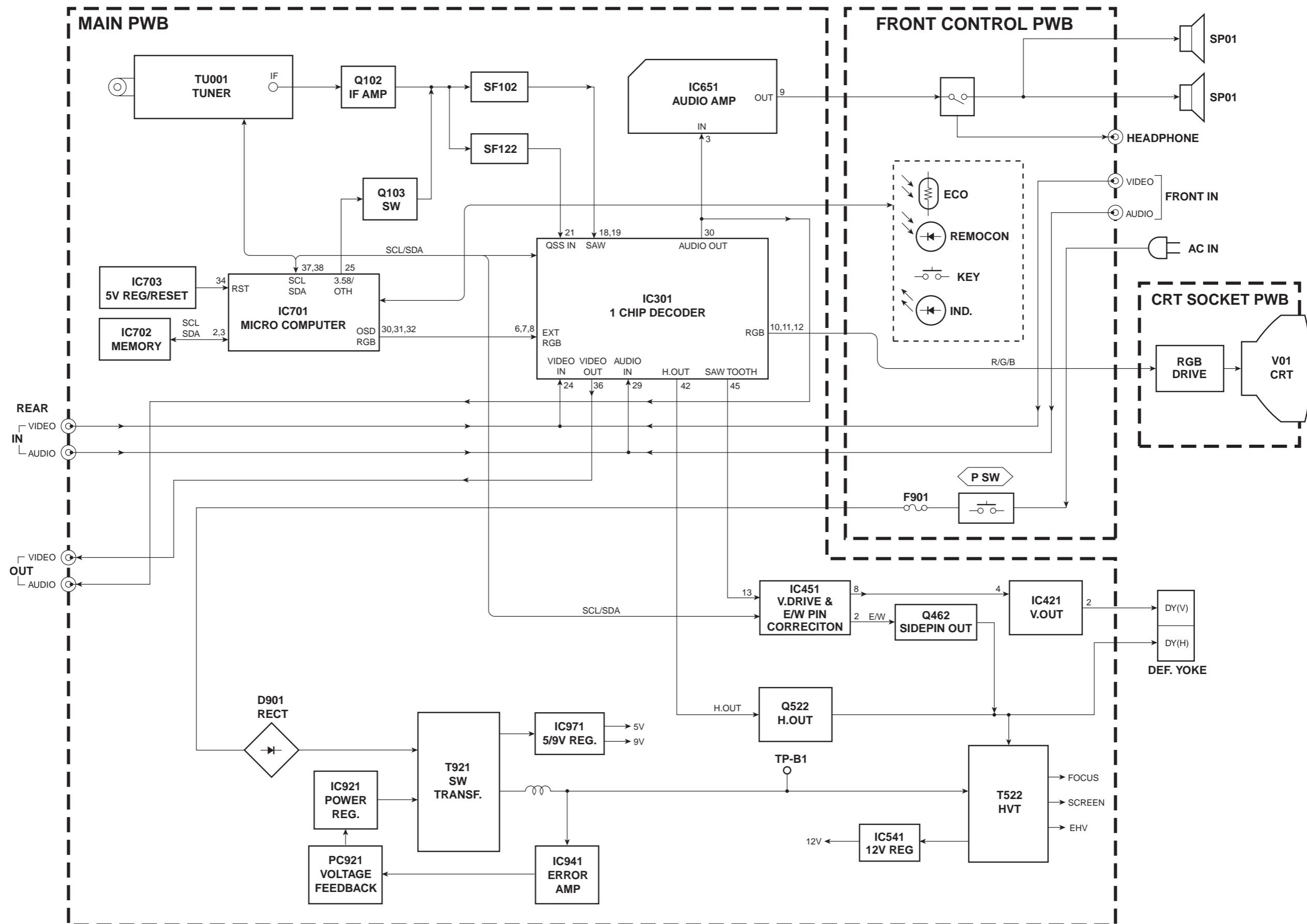
IC

BOTTOM VIEW	FRONT VIEW		TOP VIEW

CHIP IC

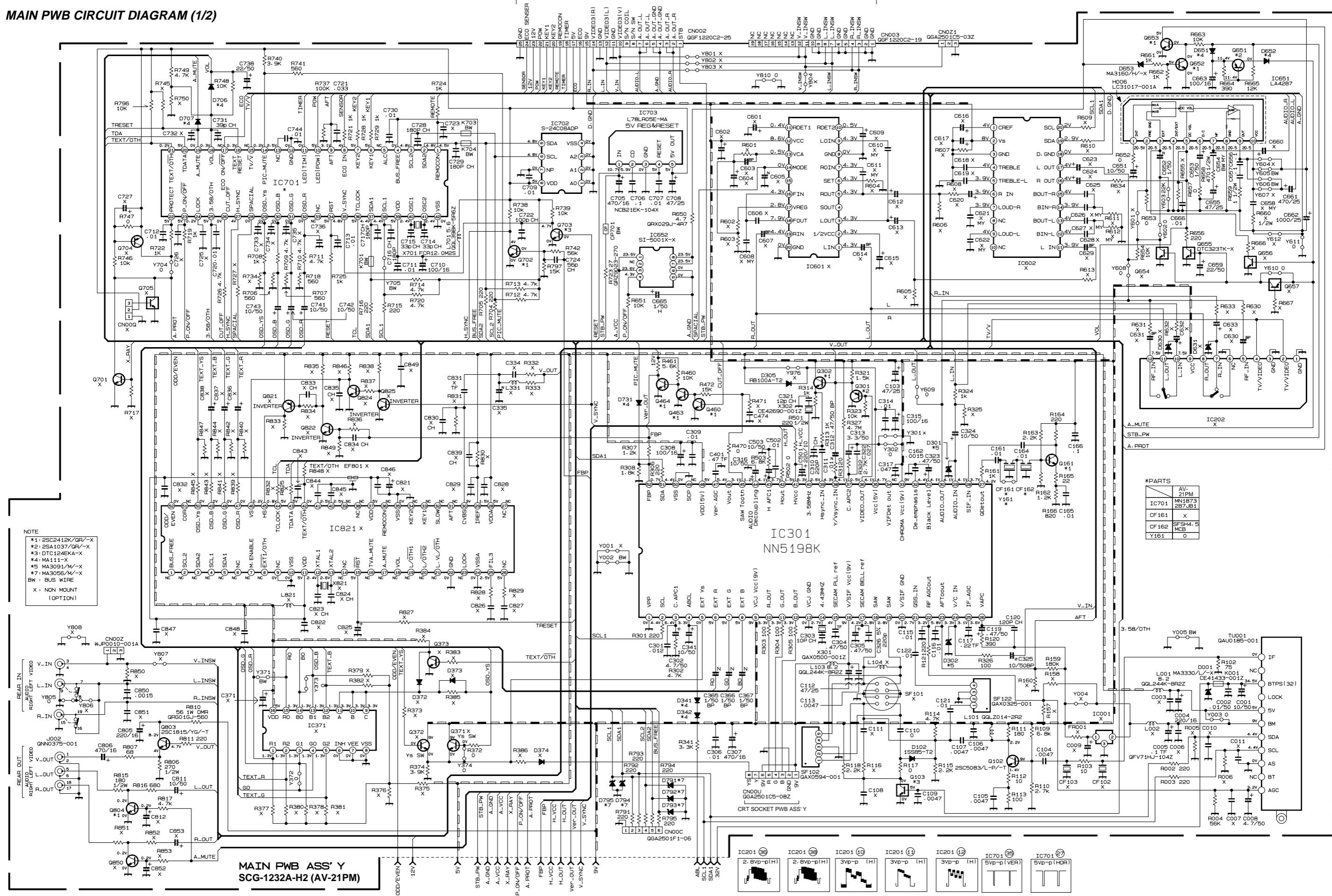
TOP VIEW		

BLOCK DIAGRAM

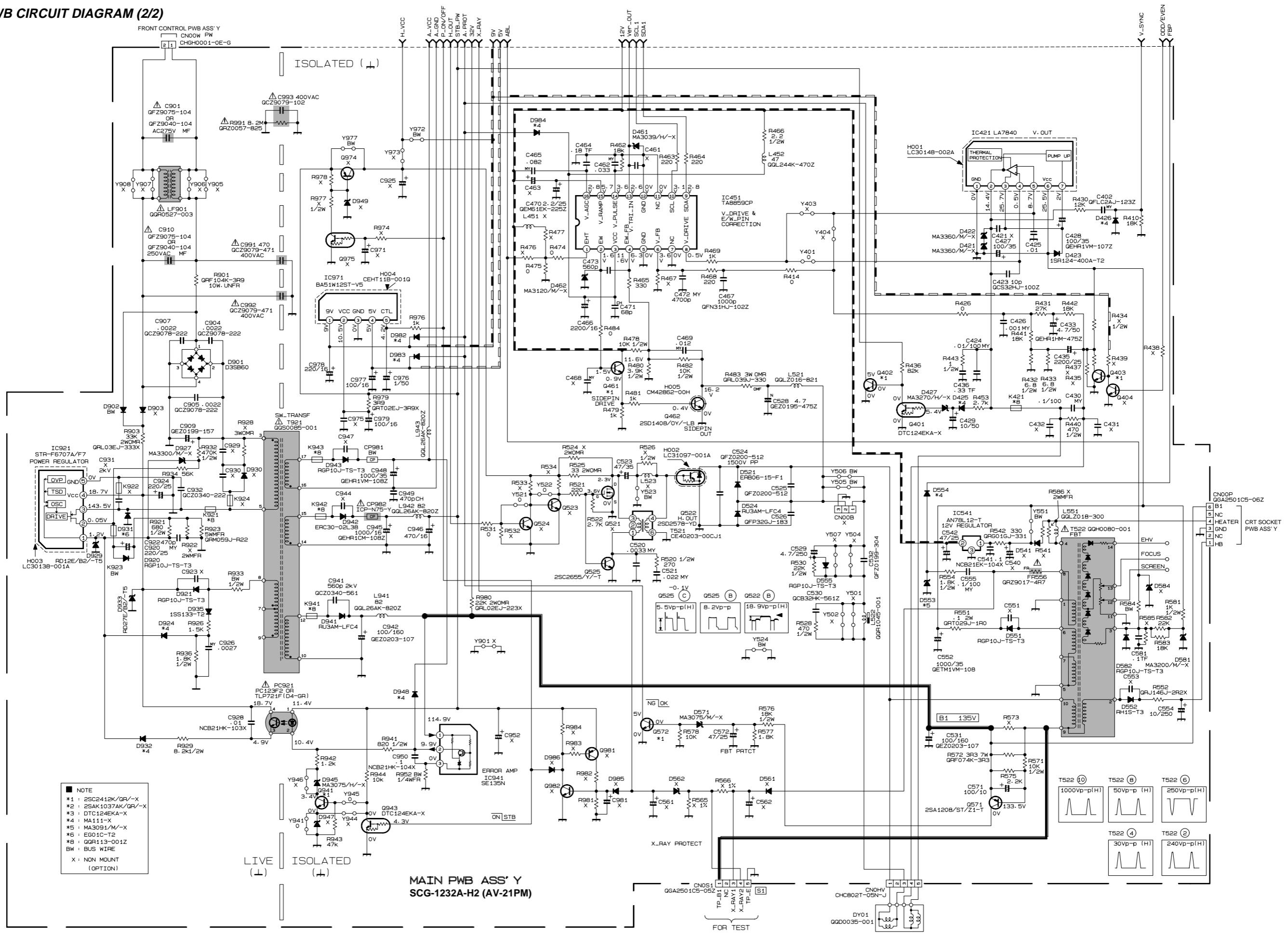


CIRCUIT DIAGRAMS

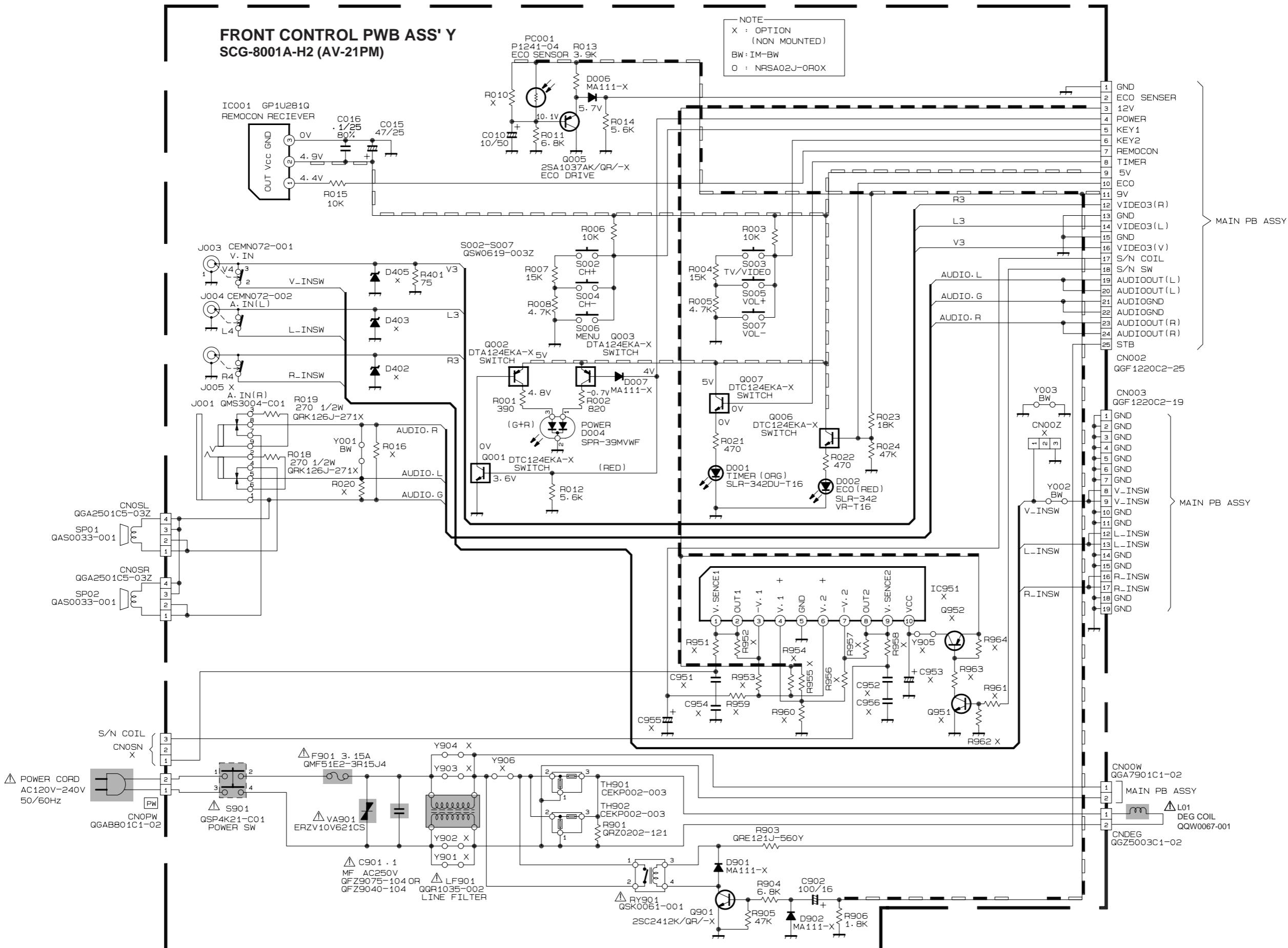
MAIN PWB CIRCUIT DIAGRAM (1/2)



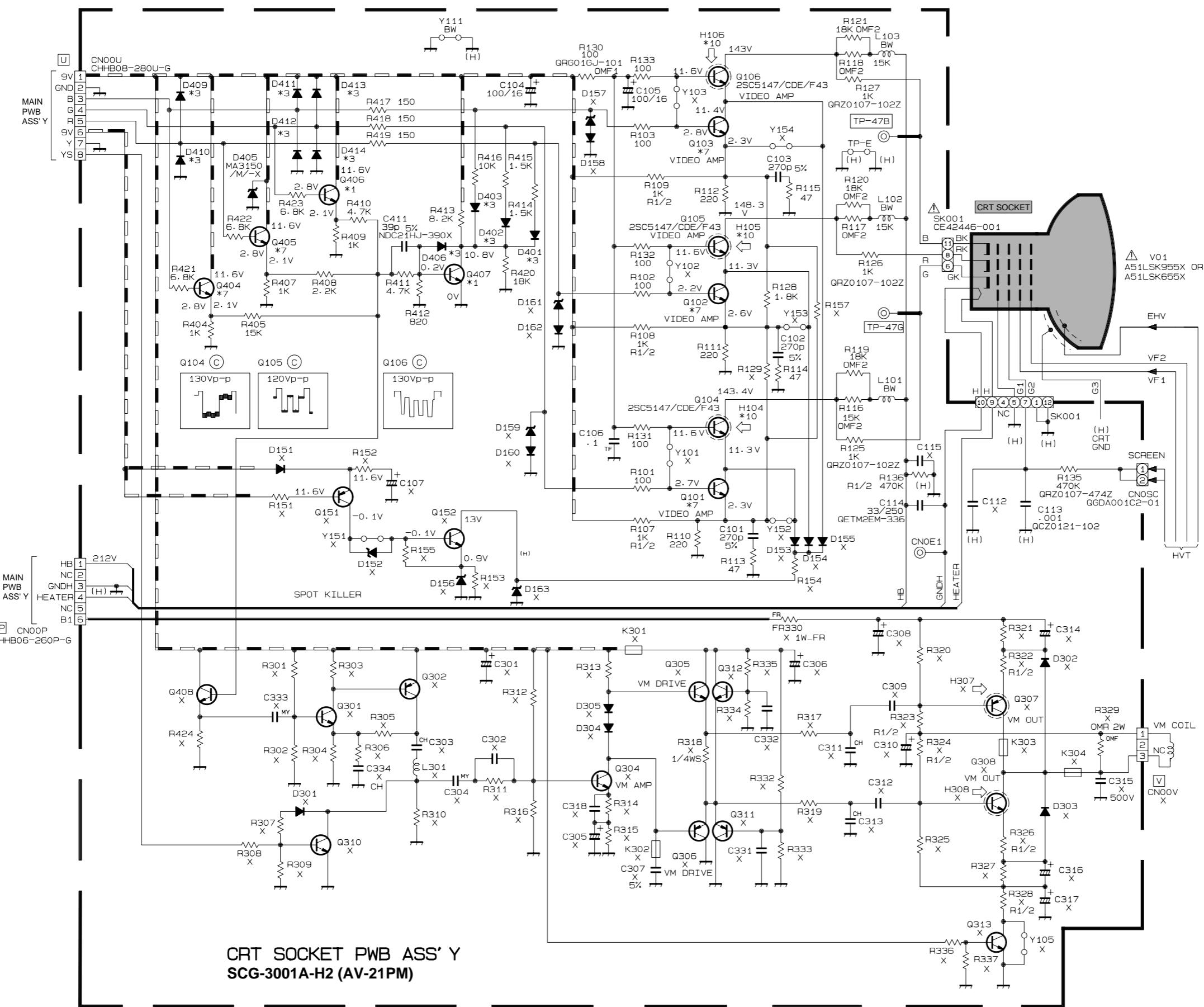
MAIN PWB CIRCUIT DIAGRAM (2/2)



FRONT CONTROL PWB CIRCUIT DIAGRAM



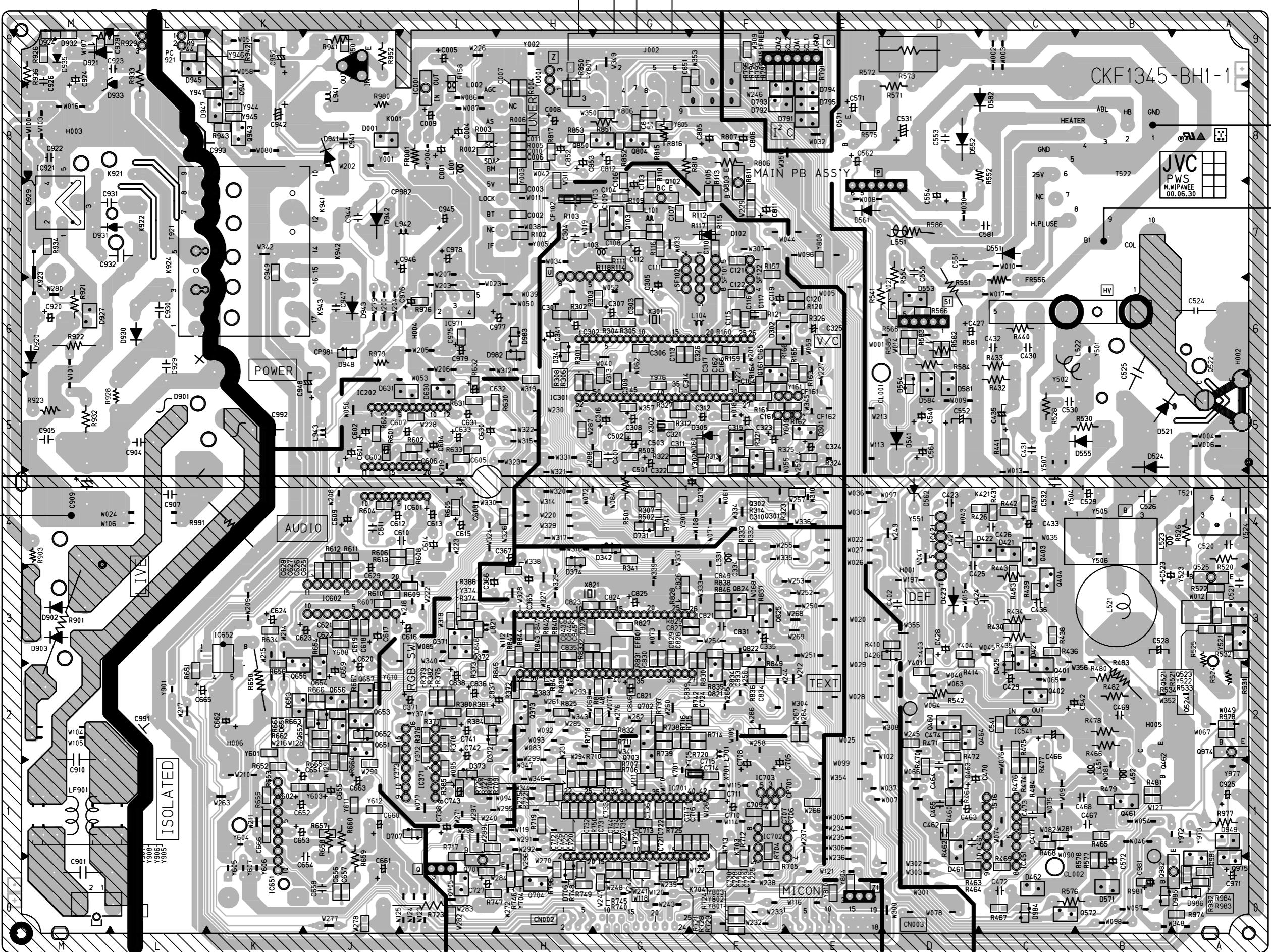
CRT SOCKET PWB CIRCUIT DIAGRAM



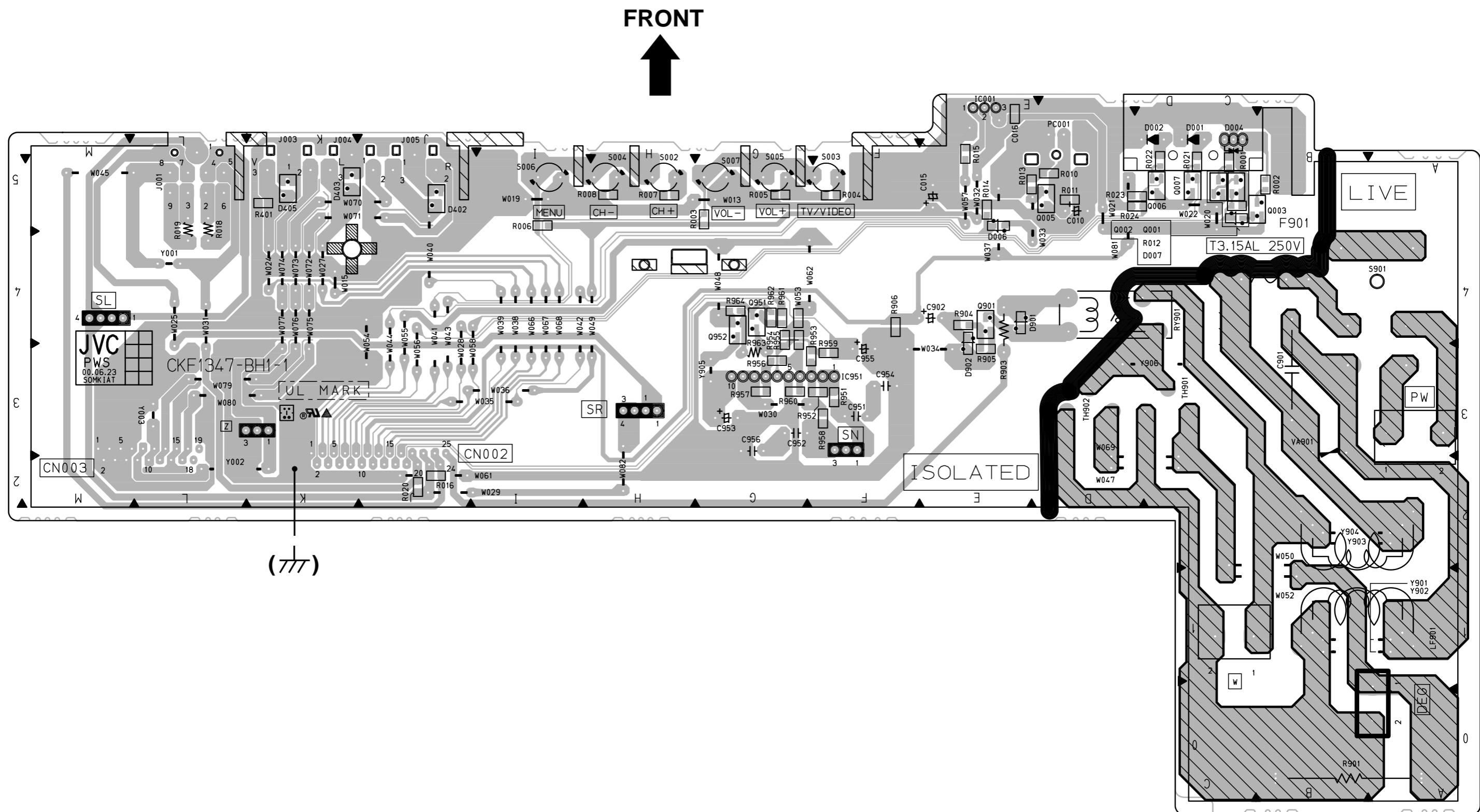
NOTE

X	: OPTION (NON MOUNTED)
BW	: IM-BW
*1	: 2SC2412K/QR/-X
*2	: 2SA1037AK/QR/-X
*3	: MA111-X
*4	: MA3100/M/-X
*5	: DTC124EKA-X
*6	: DTA124EKA-X
*7	: 2SC1740S/QR/-T
*8	: 2SA933AS/QR/-T
*9	: CE41492-001Z
*10	: CEHPOON-001Q
	: LOW B GND
	: HIGH B GND

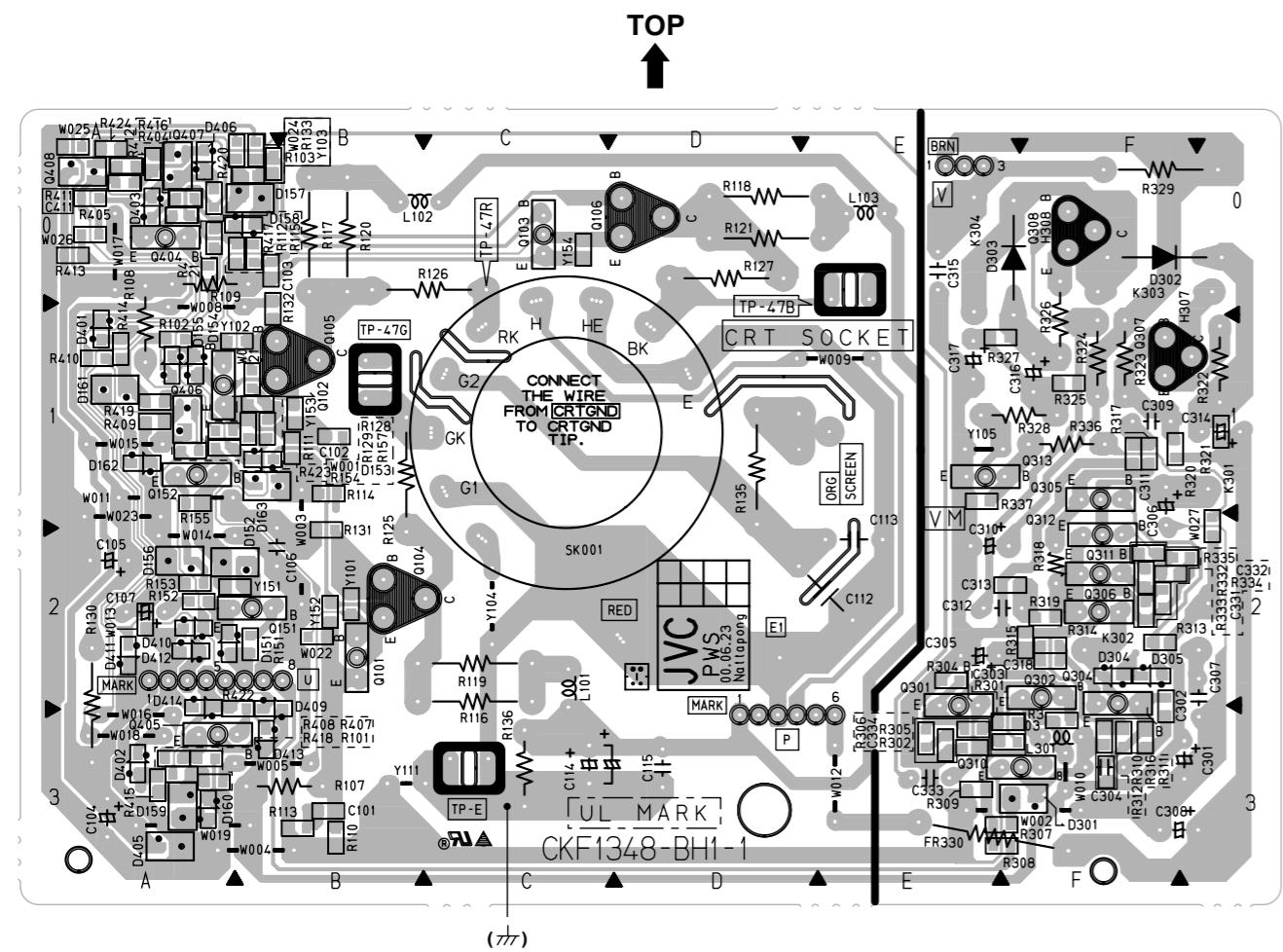
PATTERN DIAGRAMS MAIN PWB PATTERN



FRONT CONTROL PWB PATTERN



CRT SOCKET PWB PATTERN



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PARTS LIST

CAUTION

- The parts identified by the Δ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety.
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
NETW R	Network Resistor	CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$	+30% -10%	+50% -10%	+80% -20%	+100% -0%

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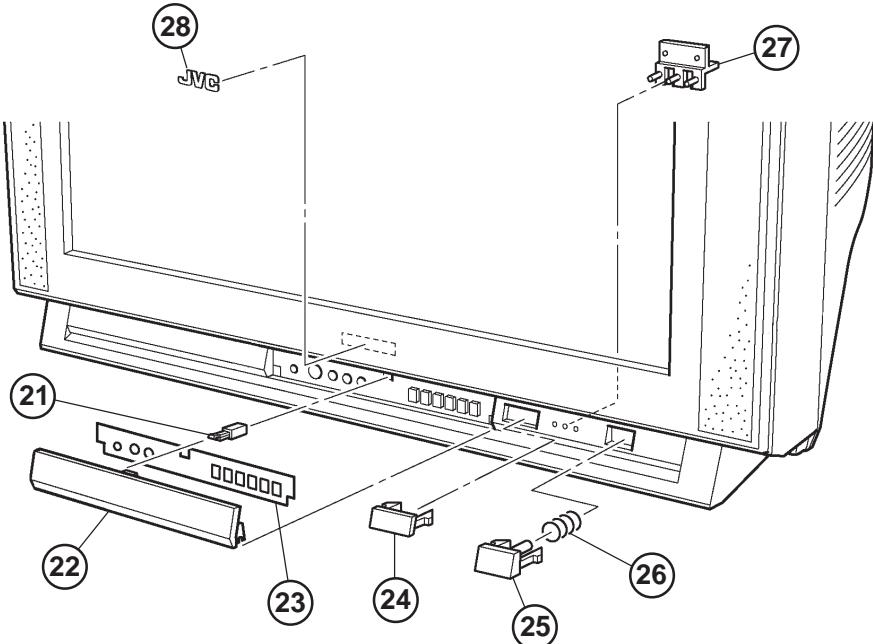
P.W. BOARDS

P.W.B. Ass'y	Part No.
MAIN P.W.B.	SCG-1232A-H2
CRT SOCKET P.W.B.	SCG-3001A-H2
FRONT CONTROL P.W.B.	SCG-8001A-H2

EXPLODED VIEW PARTS LIST-I

▲ Ref.No.	Part No.	Part Name	Description	Local
21	CN48229-00A-C	DOOR LATCH		
22	LC20336-011A-H	DOOR	(Service)	
23	LC30694-009A-H	OPERATION SHEET		
24	LC30303-001A-H	E. E. WINDOW		
25	LC30302-017A	POWER KNOB	(Service)	
26	CM35235-003-H	SPRING		
27	LC30693-001A-H	LED LENS		
28	CM48125-009	JVC MARK		

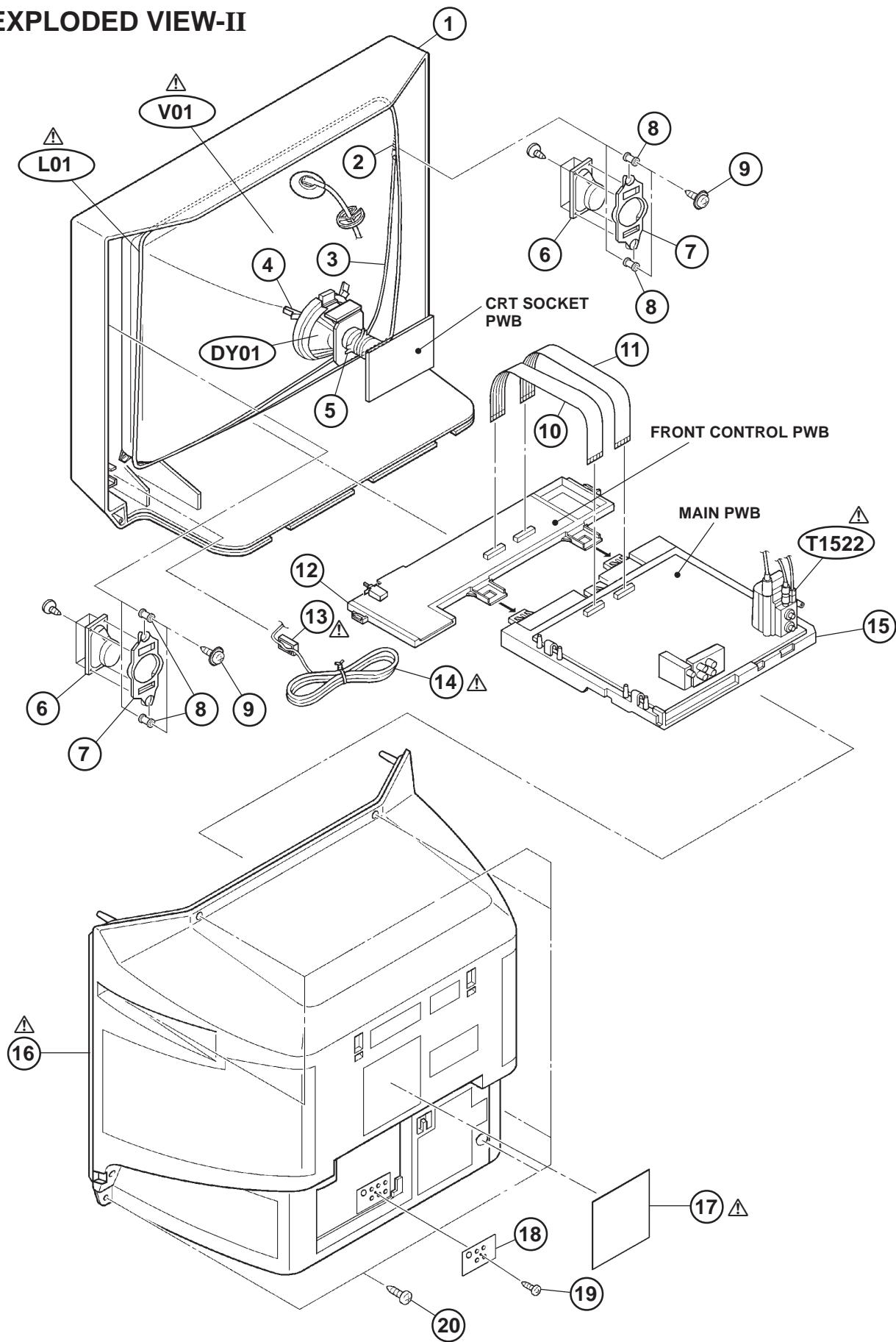
EXPLODED VIEW-I



EXPLODED VIEW PARTS LIST-II

△ Ref.No.	Part No.	Part Name	Description	Local
△ V01	A51LSK955X	PICTURE TUBE		
DY01	QQD0035-001	DEFLECTION YOKE	or A51LSK655X	
△ L01	QQW0067-001	DEG COIL		
△ T1522	QQH0080-001	H.V. TRANSF.		
1	LC10549-015A-H	FRONT CABINET ASSY		
2	A48457-3-H	SPRING		
3	CHGB0016-0B-FH	BRAIDED ASSY		
4	CE40764-00A	WEDGE ASSY	(x3)	
5	CE42378-00B	PC MAGNET		
6	QAS0033-001	SPEAKER	(x2) SP01	
7	LC20371-001D-H	SP HOLDER	(x2)	
8	LC40226-001A	SPACER	(x4)	
9	LC40317-002A-H	TAPPING SCREW	(x4)	
10	CHFD125-12BD	FFC WIRE		
11	CHFD119-14BD	FFC WIRE		
12	LC10478-002A-H	CONTROL BASE		
△ 13	CM47005-A01-H	CORD CLAMP		
△ 14	QMP40D0-200J5	POWER CORD	or QMP40D0-200J3	
15	CM12624-C02-VH	PB BASE		
△ 16	LC10551-003A-H	REAR COVER		
△ 17	LC20377-010B-H	RATING LABEL		
18	GG30013-001A-H	TERMINAL SHEET		
19	QYSBSF3012M	TAPPING SCREW		
20	QYSBSFG4016Z	TAPPING SCREW	(x7)	

EXPLODED VIEW-II



PRINTED WIRING BOARD PARTS LIST

MAIN P.W. BOARD ASS'Y (SCG-1232A-H2)

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
RESISTOR									
R1002	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1482	QRE121J-103Y	C R	10kΩ 1/2W J	
R1003	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1483	QLR039J-330	OM R	33Ω 3W J	
R1004	NRSA02J-563X	CH MG R	56kΩ 1/10W J		R1484	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1102	NRSA02J-750X	CH MG R	75Ω 1/10W J		R1501	QRE121J-221Y	C R	220Ω 1/2W J	
R1103	NRSA02J-100X	CH MG R	10Ω 1/10W J		R1502	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1109	NRSA02J-682X	CH MG R	6.8kΩ 1/10W J		R1503	NRSA02J-682X	CH MG R	6.8kΩ 1/10W J	
R1110	NRSA02J-272X	CH MG R	2.7kΩ 1/10W J		R1520	QRE121J-271Y	C R	270Ω 1/2W J	
R1111	NRSA02J-181X	CH MG R	180Ω 1/10W J		R1521	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1112	NRSA02J-100X	CH MG R	10Ω 1/10W J		R1522	NRSA02J-272X	CH MG R	2.7kΩ 1/10W J	
R1113	NRSA02J-101X	CH MG R	100Ω 1/10W J		R1525	QLR02EJ-330X	OM R	33Ω 2W J	
R1114	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J		R1528	QRE121J-471Y	C R	470Ω 1/2W J	
R1115	NRSA02J-222X	CH MG R	2.2kΩ 1/10W J		R1530	QRE121J-223Y	C R	22kΩ 1/2W J	
R1117	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1531	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1118	NRSA02J-222X	CH MG R	2.2kΩ 1/10W J		R1542	QRG01GJ-331	OM R	330Ω 1W J	
R1120	NRSA02J-391X	CH MG R	390Ω 1/10W J		R1551	QRT029J-1R0	MF R	1.0Ω 2W J	
R1121	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1552	QRJ146J-2R2X	C R	2.2Ω 1/4W J	
R1159	NRSA02J-184X	CH MG R	180kΩ 1/10W J		R1554	QRE121J-182Y	C R	1.8kΩ 1/2W J	
R1161	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1571	QRE121J-103Y	C R	10kΩ 1/2W J	
R1162	NRSA02J-122X	CH MG R	1.2kΩ 1/10W J		R1572	QRF074K-3R3	UNF R	3.3Ω 7W K	
R1163	NRSA02J-222X	CH MG R	2.2kΩ 1/10W J		R1575	NRSA02J-222X	CH MG R	2.2kΩ 1/10W J	
R1164	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1576	QRE121J-183Y	C R	18kΩ 1/2W J	
R1165	NRSA02J-220X	CH MG R	22Ω 1/10W J		R1577	NRSA02J-182X	CH MG R	1.8kΩ 1/10W J	
R1166	NRSA02J-821X	CH MG R	820Ω 1/10W J		R1578	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1301	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1581	QRE121J-102Y	C R	1kΩ 1/2W J	
R1302	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J		R1582	NRSA02J-223X	CH MG R	22kΩ 1/10W J	
R1303	NRSA02J-101X	CH MG R	100Ω 1/10W J		R1583	NRSA02J-183X	CH MG R	18kΩ 1/10W J	
R1304	NRSA02J-101X	CH MG R	100Ω 1/10W J		R1650	QRX029J-4R7	OM R	4.7Ω 2W J	
R1305	NRSA02J-101X	CH MG R	100Ω 1/10W J		R1651	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1306	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1652	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1307	NRSA02J-122X	CH MG R	1.2kΩ 1/10W J		R1653	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1308	NRSA02J-182X	CH MG R	1.8kΩ 1/10W J		R1654	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1312	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1656	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1313	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1657	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1314	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1658	QRE121J-471Y	C R	470Ω 1/2W J	
R1321	NRSA02J-152X	CH MG R	1.5kΩ 1/10W J		R1659	QRE121J-1R0Y	C R	1.0Ω 1/2W J	
R1322	NRSA02J-272X	CH MG R	2.7kΩ 1/10W J		R1661	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1323	NRSA02J-103X	CH MG R	10kΩ 1/10W J		R1662	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1324	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1663	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1326	NRSA02J-101X	CH MG R	100Ω 1/10W J		R1664	NRSA02J-391X	CH MG R	390Ω 1/10W J	
R1327	NRSA02J-475X	CH MG R	4.7MΩ 1/10W J		R1665	NRSA02J-123X	CH MG R	12kΩ 1/10W J	
R1341	NRSA02J-332X	CH MG R	3.3kΩ 1/10W J		R1704	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1372	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1705	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1374	NRSA02J-392X	CH MG R	3.9kΩ 1/10W J		R1706	NRSA02J-561X	CH MG R	560Ω 1/10W J	
R1410	NRSA02J-183X	CH MG R	18kΩ 1/10W J		R1707	NRSA02J-561X	CH MG R	560Ω 1/10W J	
R1414	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1708	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1426	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1709	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1430	NRSA02J-123X	CH MG R	12kΩ 1/10W J		R1710	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1431	NRSA02J-273X	CH MG R	27kΩ 1/10W J		R1711	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1432	QRE121J-6R8Y	C R	6.8Ω 1/2W J		R1712	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1433	QRE121J-6R8Y	C R	6.8Ω 1/2W J		R1713	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1436	NRSA02J-823X	CH MG R	82kΩ 1/10W J		R1714	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1440	QRE121J-471Y	C R	470Ω 1/2W J		R1715	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1441	NRSA02J-183X	CH MG R	18kΩ 1/10W J		R1716	NRSA02J-221X	CH MG R	220Ω 1/10W J	
R1442	NRSA02J-183X	CH MG R	18kΩ 1/10W J		R1718	NRSA02J-561X	CH MG R	560Ω 1/10W J	
R1443	QRE121J-1R0Y	C R	1.0Ω 1/2W J		R1719	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1453	NRSA02J-272X	CH MG R	2.7kΩ 1/10W J		R1720	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1460	NRSA02J-103X	CH MG R	10kΩ 1/10W J		R1721	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1461	NRSA02J-562X	CH MG R	5.6kΩ 1/10W J		R1722	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1462	NRSA02J-183X	CH MG R	18kΩ 1/10W J		R1723	QRZ9023-270	F R	27Ω 2W J	
R1463	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1724	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1464	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1725	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1465	NRSA02J-331X	CH MG R	330Ω 1/10W J		R1726	NRSA02J-472X	CH MG R	4.7kΩ 1/10W J	
R1466	QRE121J-2R2Y	C R	2.2Ω 1/2W J		R1728	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1468	NRSA02J-221X	CH MG R	220Ω 1/10W J		R1729	NRSA02J-102X	CH MG R	1kΩ 1/10W J	
R1469	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1737	NRSA02J-104X	CH MG R	100kΩ 1/10W J	
R1470	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1738	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1472	NRSA02J-153X	CH MG R	15kΩ 1/10W J		R1739	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1474	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1740	NRSA02J-392X	CH MG R	3.9kΩ 1/10W J	
R1475	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J		R1741	NRSA02J-561X	CH MG R	560Ω 1/10W J	
R1478	QRE121J-103Y	C R	10kΩ 1/2W J		R1742	NRSA02J-563X	CH MG R	56kΩ 1/10W J	
R1479	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1746	NRSA02J-103X	CH MG R	10kΩ 1/10W J	
R1480	QRE121J-392Y	C R	3.9kΩ 1/2W J		R1747	NRSA02J-OROX	CH MG R	0.0Ω 1/10W J	
R1481	NRSA02J-102X	CH MG R	1kΩ 1/10W J		R1748	NRSA02J-103X	CH MG R	10kΩ 1/10W J	

△	Symbol No.	Part No.	Part Name	Description	Local
RESISTOR					
	R1749	NRSA02J-472X	CH MG R	4.7kΩ 1/10W	J
	R1791	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1792	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1793	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1794	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1795	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1796	NRSA02J-103X	CH MG R	10kΩ 1/10W	J
	R1797	NRSA02J-153X	CH MG R	15kΩ 1/10W	J
	R1806	QRE121J-271Y	C R	270Ω 1/2W	J
	R1807	NRSA02J-680X	CH MG R	68Ω 1/10W	J
	R1810	QRG01GJ-560	OM R	56Ω 1W	J
	R1811	NRSA02J-221X	CH MG R	220Ω 1/10W	J
	R1815	QRE121J-181Y	C R	180Ω 1/2W	J
	R1816	NRSA02J-681X	CH MG R	680Ω 1/10W	J
	R1817	NRSA02J-472X	CH MG R	4.7kΩ 1/10W	J
	R1901	QRF104K-3R9	UNF R	3.9Ω 10W	K
	R1903	QRL03EJ-333X	OM R	33kΩ 3W	J
	R1921	QRE121J-681Y	C R	680Ω 1/2W	J
	R1923	QRM059J-R22	MP R	0.22Ω 5W	J
	R1926	NRSA02J-152X	CH MG R	1.5kΩ 1/10W	J
	R1929	QRE121J-822Y	C R	8.2kΩ 1/2W	J
	R1932	QRE121J-474Y	C R	470kΩ 1/2W	J
	R1934	NRSA02J-563X	CH MG R	56kΩ 1/10W	J
	R1936	QRE121J-182Y	C R	1.8kΩ 1/2W	J
	R1941	QRE121J-821Y	C R	820Ω 1/2W	J
	R1942	NRSA02J-122X	CH MG R	1.2kΩ 1/10W	J
	R1943	NRSA02J-473X	CH MG R	47kΩ 1/10W	J
	R1944	NRSA02J-103X	CH MG R	10kΩ 1/10W	J
	R1976	NRSA02J-102X	CH MG R	1kΩ 1/10W	J
	R1979	QRT02EJ-3R9X	MF R	3.9Ω 2W	J
	R1980	QRL02EJ-223X	OM R	22kΩ 2W	J
△	R1991	QRZ0057-825	C R	8.2MΩ 1W	J

△	Symbol No.	Part No.	Part Name	Description	Local
CAPACITOR					
	C1001	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1002	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1004	QETN1CM-227Z	E CAP.	220μF 16V	M
	C1005	QFV71HJ-104Z	TF CAP.	0.1μF 50V	J
	C1008	QETN1HM-475Z	E CAP.	4.7μF 50V	M
	C1103	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1104	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1105	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1106	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1107	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1109	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1110	NRSA02J-OR0X	CH MG R	0.0Ω 1/10W	J
	C1112	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1113	NCB21HK-472X	CH C CAP.	4700pF 50V	K
	C1115	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1116	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1117	QFV71HJ-224Z	TF CAP.	0.22μF 50V	J
	C1119	QETN1HM-474Z	E CAP.	0.47μF 50V	M
	C1120	NDC21HJ-121X	CH C CAP.	120pF 50V	J
	C1121	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1122	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1161	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1162	NCB21HK-152X	CH C CAP.	1500pF 50V	K
	C1164	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1165	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1166	NCB21HK-104X	CH C CAP.	0.1μF 50V	K
	C1301	NCB21HK-123X	CH C CAP.	0.012μF 50V	K
	C1302	QETN1HM-475Z	E CAP.	4.7μF 50V	M
	C1303	NDC21HJ-100X	CH C CAP.	10pF 50V	J
	C1304	QFV71HJ-474Z	TF CAP.	0.47μF 50V	J
	C1305	QETN1HM-474Z	E CAP.	0.47μF 50V	M
	C1306	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1307	QETN1CM-477Z	E CAP.	470μF 16V	M
	C1308	QETN1CM-107Z	E CAP.	100μF 16V	M
	C1309	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1310	NDC21HJ-221X	CH C CAP.	220pF 50V	J
	C1311	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1312	QENC1HM-474Z	BP E CAP.	0.47μF 50V	M
	C1313	QETN1HM-335Z	E CAP.	3.3μF 50V	M
	C1314	NCB21HK-103X	CH C CAP.	0.01μF 50V	K

△	Symbol No.	Part No.	Part Name	Description	Local
CAPACITOR					
	C1315	QETN1CM-107Z	E CAP.	100μF 16V	M
	C1316	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1317	NCB21HK-473X	CH C CAP.	0.047μF 50V	K
	C1321	NDC21HJ-120X	CH C CAP.	12pF 50V	J
	C1322	NCB21HK-273X	CH C CAP.	0.027μF 50V	K
	C1323	QETN1HM-474Z	E CAP.	0.47μF 50V	M
	C1324	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1325	QENC1HM-106Z	BP E CAP.	10μF 50V	M
	C1326	NCS21HJ-221X	CH C CAP.	220pF 50V	J
	C1341	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1365	QENC1HM-105Z	BP E CAP.	1μF 50V	M
	C1366	QENC1HM-105Z	BP E CAP.	1μF 50V	M
	C1367	QENC1HM-105Z	BP E CAP.	1μF 50V	M
	C1401	QFV71HJ-474Z	TF CAP.	0.47μF 50V	J
	C1402	QFLC2AJ-123Z	M CAP.	0.012μF 100V	J
	C1423	QCS32HJ-100Z	C CAP.	10pF 500V	J
	C1424	QFLC2AJ-103Z	M CAP.	0.01μF 100V	J
	C1425	QCB31HK-103Z	C CAP.	0.01μF 50V	K
	C1426	QFLC1HJ-102Z	M CAP.	1000pF 50V	J
	C1427	QETN1VM-107Z	E CAP.	100μF 35V	M
	C1428	QEH1VM-107Z	E CAP.	100μF 35V	M
	C1429	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1430	QFLC2AJ-104Z	M CAP.	0.1μF 100V	J
	C1433	QEHR1HM-475Z	E CAP.	4.7μF 50V	M
	C1435	QETM1EM-228	E CAP.	2200μF 25V	M
	C1436	QFV71HJ-334Z	TF CAP.	0.33μF 50V	J
	C1462	QFLC1HJ-333Z	M CAP.	0.033μF 50V	J
	C1464	QFV71HJ-184Z	TF CAP.	0.18μF 50V	J
	C1465	QFLC1HJ-823Z	M CAP.	0.082μF 50V	J
	C1466	QETM1CM-228	E CAP.	2200μF 16V	M
	C1467	QFN31HJ-102Z	M CAP.	1000pF 50V	J
	C1469	QFLC1HJ-123Z	M CAP.	0.012μF 50V	J
	C1470	QEM61EK-225Z	E CAP.	2.2μF 25V	K
	C1471	NDC21HJ-680X	CH C CAP.	68pF 50V	J
	C1472	QFLC1HJ-472Z	M CAP.	4700pF 50V	J
	C1473	QCB31HK-561Z	C CAP.	560pF 50V	K
	C1501	QETN1AM-227Z	E CAP.	220pF 10V	M
	C1502	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1503	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1520	QFLC2AJ-332Z	M CAP.	3300pF 50V	J
	C1521	QFLC1HJ-223Z	M CAP.	0.022μF 50V	J
	C1523	QETN1VM-476Z	E CAP.	47μF 35V	M
	C1524	QFZ0200-512	MPP CAP.	5100pF 1.5KVH ±3%	M
	C1525	QFZ0200-512	MPP CAP.	5100pF 1.5KVH ±3%	M
	C1526	QFP32GJ-183	PP CAP.	0.018μF 400V	J
	C1528	QEZO195-475Z	E CAP.	4.7μF 50V	M
	C1529	QETN2EM-475Z	E CAP.	4.7μF 250V	M
	C1530	QCB32HK-561Z	C CAP.	560pF 500V	K
	C1531	QEZO203-107	E CAP.	100μF 160V	M
	C1532	QFZ0199-304	MPP CAP.	0.3μF 250V	J
	C1541	NCB21EK-104X	CH C CAP.	0.1μF 25V	K
	C1542	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1552	QETM1VM-108	E CAP.	1000μF 35V	M
	C1554	QETN2EM-106Z	E CAP.	10μF 250V	M
	C1555	QFLC2AJ-104Z	M CAP.	0.1μF 100V	J
	C1571	QETN1AM-107Z	E CAP.	100μF 10V	M
	C1572	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1581	QFV71HJ-104Z	TF CAP.	0.1μF 50V	J
	C1651	QETN1HM-106Z	E CAP.	10μF 50V	M
	C1652	QTCN1HM-105Z	BP E CAP.	1μF 50V	M
	C1653	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1655	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1656	NCB21HK-104X	CH C CAP.	0.1μF 50V	K
	C1657	NCB21HK-104X	CH C CAP.	0.1μF 50V	K
	C1659	QETN1HM-226Z	E CAP.	22μF 50V	M
	C1661	QETN1EM-477Z	E CAP.	470μF 25V	M
	C1662	QETM1EM-228	E CAP.	2200μF 25V	M
	C1663	QETN1CM-107Z	E CAP.	100μF 16V	M
	C1665	QEHR1HM-105Z	E CAP.	1μF 50V	M
	C1666	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1705	QETN1CM-477Z	E CAP.	470μF 16V	M
	C1706	NCB21EK-104X	CH C CAP.	0.1μF 25V	K
	C1707	NCB21HK-103X	CH C CAP.	0.01μF 50V	K
	C1708	QETN1EM-476Z	E CAP.	47μF 25V	M
	C1709	NCB21HK-103X	CH C CAP.	0.01μF 50V	K

△	Symbol No.	Part No.	Part Name	Description	Local
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CAPACITOR

C1710	QETN1CM-107Z	E CAP.	100 μ F	16V	M
C1711	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1712	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1713	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1714	NDC21HJ-330X	CH C CAP.	33 pF	50V	J
C1715	NDC21HJ-330X	CH C CAP.	33 pF	50V	J
C1716	NDC21HJ-181X	CH C CAP.	180 pF	50V	J
C1717	NDC21HJ-181X	CH C CAP.	180 pF	50V	J
C1720	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1721	NCB21HK-333X	CH C CAP.	0.033 μ F	50V	K
C1722	NDC21HJ-101X	CH C CAP.	100 pF	50V	J
C1724	NDC21HJ-560X	CH C CAP.	56 pF	50V	J
C1728	NDC21HJ-181X	CH C CAP.	180 pF	50V	J
C1729	NDC21HJ-181X	CH C CAP.	180 pF	50V	J
C1730	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1731	NDC21HJ-390X	CH C CAP.	39 pF	50V	J
C1738	QETN1HM-226Z	E CAP.	22 μ F	50V	M
C1741	QETN1HM-106Z	E CAP.	10 μ F	50V	M
C1742	QETN1HM-106Z	E CAP.	10 μ F	50V	M
C1743	QETN1HM-106Z	E CAP.	10 μ F	50V	M
C1744	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1805	QETN1CM-227Z	E CAP.	220 μ F	16V	M
C1806	QETN1CM-477Z	E CAP.	470 μ F	16V	M
C1811	QETN1HM-106Z	E CAP.	10 μ F	50V	M
C1850	NCB21HK-152X	CH C CAP.	1500 pF	50V	K
△ C1901	QFZ9075-104	MPP CAP.	0.1 μ F	AC275V	M
C1904	QCZ9078-222	C CAP.	2200 pF	AC250V	M
C1905	QCZ9078-222	C CAP.	2200 pF	AC250V	M
C1907	QCZ9078-222	C CAP.	2200 pF	AC250V	M
C1909	QEZ0199-157	E CAP.	150 μ F	400V	M
△ C1910	QFZ9075-104	MPP CAP.	0.1 μ F	AC275V	M
C1920	QETN1EM-227Z	E CAP.	220 μ F	25V	M
C1922	QFLC1HJ-471Z	M CAP.	470 pF	50V	J
C1924	QETN1EM-227Z	E CAP.	220 μ F	25V	M
C1926	QFLC1HJ-272Z	M CAP.	2700 pF	50V	J
C1928	NCB21HK-103X	CH C CAP.	0.01 μ F	50V	K
C1932	QCZ0340-222	C CAP.	2200 pF	2kV	K
C1941	QCZ0340-561	C CAP.	560 pF	2kV	K
C1942	QEZ0203-107	E CAP.	100 μ F	160V	M
C1945	QEHR1CM-108Z	E CAP.	1000 μ F	16V	M
C1946	QEHR1CM-477Z	E CAP.	470 μ F	16V	M
C1948	QEHR1VM-108Z	E CAP.	1000 μ F	35V	M
C1949	NDC21HJ-471X	CH C CAP.	470 pF	50V	J
C1950	NCB21HK-104X	CH C CAP.	0.1 μ F	50V	K
C1976	QETN1HM-105Z	E CAP.	1 μ F	50V	M
C1977	QETN1CM-107Z	E CAP.	100 μ F	16V	M
C1978	QETN1CM-227Z	E CAP.	220 μ F	16V	M
C1979	QETN1CM-107Z	E CAP.	100 μ F	16V	M
△ C1991	QCZ9079-471	C CAP.	470 pF	AC250V	K
△ C1992	QCZ9079-471	C CAP.	470 pF	AC250V	K
△ C1993	QCZ9079-102	C CAP.	1000 pF	AC250V	K

TRANSFORMER

T1521	CE40203-00CJ1	DRIVE TRANSF.
△ T1522	QQH0080-001	H.T. TRANSF.
△ T1921	QQS0085-001	SW TRANSF.

COIL

L1101	QQL244K-8R2Z	PEAKING COIL	8.2 μ H	K
L1101	QQLZ014-2R2	PEAKING COIL	2.2 μ H	
L1103	QQL244K-8R2Z	PEAKING COIL	8.2 μ H	K
L1452	QQL244K-470Z	PEAKING COIL		
L1521	QQLZ016-821	CHOKE COIL		
L1522	QQR1045-001	LINIARITY COIL		
L1551	QQLZ018-300	HEATER CHOKE		
L1701	QLL39BK-5R6Z	PEAKING COIL	5.6 μ H	K
L1941	QLL26AK-820Z	CHOKE COIL	82 μ H	K
L1942	QLL26AK-820Z	CHOKE COIL	82 μ H	K
L1943	QLL26AK-820Z	CHOKE COIL	82 μ H	K

△	Symbol No.	Part No.	Part Name	Description	Local
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DIODE

D1001	MA3330/L/-X	CHIP ZENER DIODE
D1102	1SS85-T2	SI DIODE
D1301	MA3091/M/-X	CHIP ZENER DIODE
D1302	MA3091/M/-X	CHIP ZENER DIODE
D1305	R8100A-T2	SI DIODE
D1341	MA111-X	CHIP DIODE
D1342	MA111-X	CHIP DIODE
D1421	MA3360/M/-X	CHIP ZENER DIODE
D1422	MA3360/M/-X	CHIP ZENER DIODE
D1423	1SR124-400A-T2	SI DIODE
D1425	MA111-X	CHIP DIODE
D1426	MA111-X	CHIP DIODE
D1427	MA3270/H/-X	CHIP ZENER DIODE
D1461	MA3039/H/-X	CHIP ZENER DIODE
D1462	MA3120/M/-X	CHIP ZENER DIODE
D1521	ERB015-F1	SI DIODE
D1524	RU3AM-LFC4	SI DIODE
D1551	RGP10J-TS-T3	SI DIODE
D1552	RH15-T3	SI DIODE
D1553	MA3091/M/-X	CHIP ZENER DIODE
D1554	MA111-X	CHIP DIODE
D1555	RGP10J-TS-T3	SI DIODE
D1571	MA3075/M/-X	CHIP ZENER DIODE
D1581	MA3200/M/-X	CHIP ZENER DIODE
D1582	RGP10J-TS-T3	SI DIODE
D1651	MA111-X	CHIP DIODE
D1652	MA111-X	CHIP DIODE
D1653	MA3160/M/-X	DIODE
D1706	MA111-X	CHIP DIODE
D1707	MA111-X	CHIP DIODE
D1731	MA111-X	CHIP DIODE
D1791	MA3056/M/-X	CHIP ZENER DIODE
D1792	MA3056/M/-X	CHIP ZENER DIODE
D1793	MA3056/M/-X	CHIP ZENER DIODE
D1794	MA3056/M/-X	CHIP ZENER DIODE
D1795	MA3056/M/-X	CHIP ZENER DIODE
D1901	D3SB60	BRIDGE DIODE
D1920	RGP10J-TS-T3	SI DIODE
D1921	RGP10J-TS-T3	SI DIODE
D1924	MA111-X	CHIP DIODE
D1927	MA3150/M/-X	CHIP ZENER DIODE
D1929	RD12E/B2/-T5	ZENER DIODE
D1931	EG01C-T2	SI DIODE
D1932	MA111-X	CHIP DIODE
D1933	RD27E/B2/-T5	ZENER DIODE
D1935	1SS133-T2	SI DIODE
D1941	RU3AM-LFC4	SI DIODE
D1942	ERC30-02L38	SI DIODE
D1943	RGP10J-TS-T3	SI DIODE
D1945	MA3075/H/-X	CHIP ZENER DIODE
D1948	MA111-X	CHIP DIODE
D1982	MA111-X	CHIP DIODE
D1983	MA111-X	CHIP DIODE
D1984	MA111-X	CHIP DIODE
Q1102	2SC5083/L-P/-T	SI TRANSISTOR
Q1103	DTC124EKA-X	DIGI TRANSISTOR
Q1161	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1301	2SA1037AK/QR/-X	SI TRANSISTOR
Q1302	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1401	DTC124EKA-X	DIGI TRANSISTOR
Q1402	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1403	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1460	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1461	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1462	2SD1408/Y/-LB	POWER TRANSISTOR
Q1463	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1464	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1522	2SD2578-YD	POWER TRANSISTOR
Q1525	2SC2655/Y/Y-T	SI TRANSISTOR
Q1571	2SA1208/ST/Z1-T	SI TRANSISTOR
Q1572	2SC2412K/QR/-X	CHIP TRANSISTOR
Q1651	2SA1037AK/QR/-X	SI TRANSISTOR
		H. OUT

△	Symbol No.	Part No.	Part Name	Description	Local
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TRANSISTOR

Q1652	2SC2412K/QR/-X	CHIP TRANSISTOR			
Q1653	2SC2412K/QR/-X	CHIP TRANSISTOR			
Q1655	DTC323TK-X	DIGI TRANSISTOR			
Q1702	2SC2412K/QR/-X	CHIP TRANSISTOR			
Q1703	DTC124EKA-X	DIGI TRANSISTOR			
Q1803	2SC1815/YG/-T	SI TRANSISTOR			
Q1804	2SC2412K/QR/-X	CHIP TRANSISTOR			
Q1941	2SC2412K/QR/-X	CHIP TRANSISTOR			
Q1943	DTC124EKA-X	DIGI TRANSISTOR			

IC

IC1301	NN5198K	IC			
IC1421	LA7840	IC			
IC1451	TA8859CP	IC			
IC1541	AN78L12-T	IC			
IC1651	LA4287	IC			
IC1652	SI-5001X-X	IC			
IC1701	MN1873287JB1	IC (MICROCOMPUTER)			
IC1702	AT24C08-21PM	IC (MEMORY)	(Service)		
IC1703	L78LR05E-MA	IC (5V REG/RESET)			
IC1921	STR-F6707A/F7	IC (SW REG)			
IC1941	SE135N	IC			
IC1971	BA51W12ST-V5	IC (5V/9V REG)			

OTHERS

△	FR1556	QRZ9017-4R7	F R	4.7Ω	1/4W	J
	CF1162	SFSH4.5MCB	CERAMIC FILTER			
	CN1002	QGF1220C2-25	FFC/FPC CONNECTOR			
	CN1003	QGF1220C2-19	FFC/FPC CONNECTOR			
△	CP1982	ICP-N75-Y	IC PROTECTOR			
	J1002	QNN0375-001	PIN JACK			
	K1001	CE41433-001Z	BEADS CORE			
	K1421	QQR1113-001Z	FERRITE BEADS			
	K1921	QQR1113-001Z	FERRITE BEADS			
	K1941	QQR1113-001Z	FERRITE BEADS			
	K1942	QQR1113-001Z	FERRITE BEADS			
	K1943	QQR1113-001Z	FERRITE BEADS			
△	LF1901	QQR0527-003	LINE FILTER			
△	PC1921	PC123F2	PHOTO COUPLER			
	SF1102	QAX0594-001	SAW FILTER			
	SF1122	QAX0325-001	SAW FILTER			
	TU1001	QAU0185-001	TUNER			
	X1301	QAX0500-001Z	CRYSTAL			
	X1302	CE42690-001Z	CRYSTAL			
	X1701	FCR12.0M2S	C RESONATOR			

CRT SOCKET P.W. BOARD ASS'Y (SCG-3001A-H2)

△	Symbol No.	Part No.	Part Name	Description	Local
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RESISTOR

R3101	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3102	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3103	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3107	QRE121J-102Y	C R	1kΩ	1/2W	J
R3108	QRE121J-102Y	C R	1kΩ	1/2W	J
R3109	QRE121J-102Y	C R	1kΩ	1/2W	J
R3110	NRSA02J-221X	CH MG R	220Ω	1/10W	J
R3111	NRSA02J-221X	CH MG R	220Ω	1/10W	J
R3112	NRSA02J-221X	CH MG R	220Ω	1/10W	J
R3113	NRSA02J-470X	CH MG R	47Ω	1/10W	J
R3114	NRSA02J-470X	CH MG R	47Ω	1/10W	J
R3115	NRSA02J-470X	CH MG R	47Ω	1/10W	J
R3116	QRL029J-153	OM R	15kΩ	2W	J
R3117	QRL029J-153	OM R	15kΩ	2W	J
R3118	QRL029J-153	OM R	15kΩ	2W	J
R3119	QRL029J-183	OM R	18kΩ	2W	J
R3120	QRL029J-183	OM R	18kΩ	2W	J
R3121	QRL029J-183	OM R	18kΩ	2W	J
R3125	QRZ0107-102Z	C R	1kΩ	1/2W	K
R3126	QRZ0107-102Z	C R	1kΩ	1/2W	K
R3127	QRZ0107-102Z	C R	1kΩ	1/2W	K
R3128	NRSA02J-123X	CH MG R	12kΩ	1/10W	J
R3129	NRSA02J-392X	CH MG R	3.9kΩ	1/10W	J
R3130	QRG01GJ-101	OM R	100Ω	1W	J
R3131	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3132	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3133	NRSA02J-101X	CH MG R	100Ω	1/10W	J
R3135	QRZ0107-474Z	C R	470kΩ	1/2W	K
R3404	NRSA02J-102X	CH MG R	1kΩ	1/10W	J
R3405	NRSA02J-153X	CH MG R	15kΩ	1/10W	J
R3407	NRSA02J-102X	CH MG R	1kΩ	1/10W	J
R3408	NRSA02J-222X	CH MG R	2.2kΩ	1/10W	J
R3409	NRSA02J-102X	CH MG R	1kΩ	1/10W	J
R3410	NRSA02J-472X	CH MG R	4.7kΩ	1/10W	J
R3411	NRSA02J-472X	CH MG R	4.7kΩ	1/10W	J
R3412	NRSA02J-821X	CH MG R	820Ω	1/10W	J
R3413	NRSA02J-822X	CH MG R	8.2kΩ	1/10W	J
R3414	NRSA02J-152X	CH MG R	1.5kΩ	1/10W	J
R3415	NRSA02J-152X	CH MG R	1.5kΩ	1/10W	J
R3416	NRSA02J-103X	CH MG R	10kΩ	1/10W	J
R3417	NRSA02J-151X	CH MG R	150Ω	1/10W	J
R3418	NRSA02J-151X	CH MG R	150Ω	1/10W	J
R3419	NRSA02J-151X	CH MG R	150Ω	1/10W	J
R3420	NRSA02J-183X	CH MG R	18kΩ	1/10W	J
R3421	NRSA02J-682X	CH MG R	6.8kΩ	1/10W	J
R3422	NRSA02J-682X	CH MG R	6.8kΩ	1/10W	J
R3423	NRSA02J-682X	CH MG R	6.8kΩ	1/10W	J

CAPACITOR

C3101	NCS21HJ-271X	CH C CAP.	270pF	50V	J
C3102	NCS21HJ-271X	CH C CAP.	270pF	50V	J
C3103	NCS21HJ-271X	CH C CAP.	270pF	50V	J
C3104	QETN1CM-107Z	E CAP.	100pF	16V	M
C3105	QETN1CM-107Z	E CAP.	100pF	16V	M
C3106	QFV71HJ-104Z	TF CAP.	0.1μF	50V	J
C3113	QCZ0121-102	C CAP.	1000pF	3kV	Z
C3114	QETM2EM-336	E CAP.	33μF	250V	M
C3411	NDC21HJ-390X	CH C CAP.	39pF	50V	J

DIODE

D3401	MA111-X	CHIP DIODE			
D3402	MA111-X	CHIP DIODE			
D3403	MA111-X	CHIP DIODE			
D3405	MA3150/M/-X	CHIP ZENER DIODE			
D3406	MA111-X	CHIP DIODE			
D3409	MA111-X	CHIP DIODE			
D3410	MA111-X	CHIP DIODE			
D3411	MA111-X	CHIP DIODE			
D3412	MA111-X	CHIP DIODE			
D3413	MA111-X	CHIP DIODE			
D3414	MA111-X	CHIP DIODE			

△ Symbol No.	Part No.	Part Name	Description	Local
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TRANSISTOR

Q3101	2SC1740S/QR/-T	SI TRANSISTOR
Q3102	2SC1740S/QR/-T	SI TRANSISTOR
Q3103	2SC1740S/QR/-T	SI TRANSISTOR
Q3104	2SC5147/CDE/F43	POWER TRANSISTOR
Q3105	2SC5147/CDE/F43	POWER TRANSISTOR
Q3106	2SC5147/CDE/F43	POWER TRANSISTOR
Q3404	2SC1740S/QR/-T	SI TRANSISTOR
Q3405	2SC1740S/QR/-T	SI TRANSISTOR
Q3406	2SC2412K/QR/-X	CHIP TRANSISTOR
Q3407	2SC2412K/QR/-X	CHIP TRANSISTOR

OTHERS

△ SK3001	CE42446-001	CRT SOCKET
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**FRONT CONTROL P.W. BOARD ASS'Y
(SCG-8001A-H2)**

△ Symbol No.	Part No.	Part Name	Description	Local
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RESISTOR

R8001	NRSA02J-391X	CH MG R	390Ω	1/10W	J
R8002	NRSA02J-821X	CH MG R	820Ω	1/10W	J
R8003	NRSA02J-103X	CH MG R	10kΩ	1/10W	J
R8004	NRSA02J-153X	CH MG R	15kΩ	1/10W	J
R8005	NRSA02J-472X	CH MG R	4.7kΩ	1/10W	J
R8006	NRSA02J-103X	CH MG R	10kΩ	1/10W	J
R8007	NRSA02J-153X	CH MG R	15kΩ	1/10W	J
R8008	NRSA02J-472X	CH MG R	4.7kΩ	1/10W	J
R8011	NRSA02J-682X	CH MG R	6.8kΩ	1/10W	J
R8012	NRSA02J-562X	CH MG R	5.6kΩ	1/10W	J
R8013	NRSA02J-392X	CH MG R	3.9kΩ	1/10W	J
R8014	NRSA02J-562X	CH MG R	5.6kΩ	1/10W	J
R8015	NRSA02J-103X	CH MG R	10kΩ	1/10W	J
R8018	QRK126J-271X	C R	270Ω	1/2W	J
R8019	QRK126J-271X	C R	270Ω	1/2W	J
R8021	NRSA02J-471X	CH MG R	470Ω	1/10W	J
R8022	NRSA02J-471X	CH MG R	470Ω	1/10W	J
R8023	NRSA02J-183X	CH MG R	18kΩ	1/10W	J
R8024	NRSA02J-473X	CH MG R	47kΩ	1/10W	J
R8401	NRSA02J-750X	CH MG R	75Ω	1/10W	J
R8901	QRZ0202-121	UNF R	120Ω	15W	J
R8903	QRE121J-560Y	C R	56Ω	1/2W	J
R8904	NRSA02J-682X	CH MG R	6.8kΩ	1/10W	J
R8905	NRSA02J-473X	CH MG R	47kΩ	1/10W	J
R8906	NRSA02J-182X	CH MG R	1.8kΩ	1/10W	J

CAPACITOR

C8010	QETN1HM-106Z	E CAP.	10μF	50V	M
C8015	QETN1EM-476Z	E CAP.	47μF	25V	M
C8016	NCF21EZ-104X	CH C CAP.	0.1μF	25V	Z
△ C8901	QFZ9075-104	MPP CAP.	0.1μF	AC275V	M
C8902	QETN1CM-107Z	E CAP.	0.1μF	AC276V	M

DIODE

D8001	SLR-342DU-T16	LED (ORG)
D8002	SLR-342VR-T16	LED (RED)
D8004	SPR-39MVWF	LED2 (G+R)
D8006	MA111-X	CHIP DIODE
D8007	MA111-X	CHIP DIODE
D8901	MA111-X	CHIP DIODE
D8902	MA111-X	CHIP DIODE

TRANSISTOR

Q8001	DTC124EKA-X	DIGI TRANSISTOR
Q8002	DTA124EKA-X	DIGI TRANSISTOR
Q8003	DTA124EKA-X	DIGI TRANSISTOR
Q8005	2SA1037AK/QR/-X	SI TRANSISTOR
Q8006	DTC124EKA-X	DIGI TRANSISTOR
Q8007	DTC124EKA-X	DIGI TRANSISTOR
Q8901	2SC2412K/QR/-X	CHIP TRANSISTOR

IC

IC8001	GP1U281Q	IC
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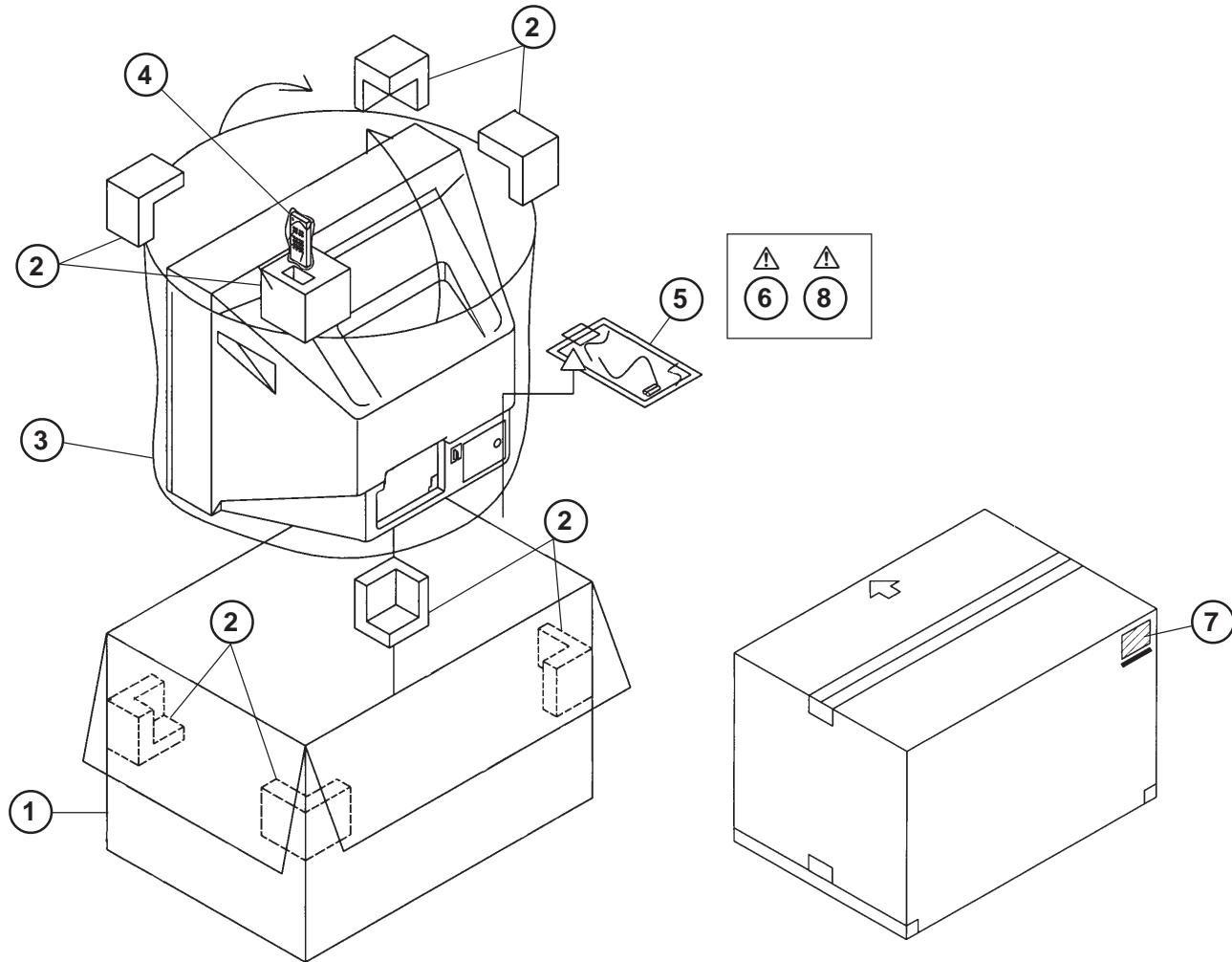
OTHERS

CM35921-005-H	CDS HOLDER	
CEMG002-001Z	FUSE CLIP (x2)	
CM36626-B01-H	LED HOLDER	
CN8002	QGF1220C2-25	FFC/FPC CONNECTOR
CN8003	QGF1220C2-19	FFC/FPC CONNECTOR
△ F8901	QMF51E2-3R15J4	FUSE
J8001	QMS3004-C01	HEADPHONE JACK
J8003	CEMN072-001	PIN JACK
J8004	CEMN072-002	PIN JACK
△ LF8901	QQR1035-002	LINE FILTER
PC8001	P1241-04	CDS

△	Symbol No.	Part No.	Part Name	Description	Local
OTHERS					
	RY8901	QSK0061-001	RELAY		
	S8002	QSW0619-003Z	PUSH SWITCH	CH+	
	S8003	QSW0619-003Z	PUSH SWITCH	TV/VIDEO	
	S8004	QSW0619-003Z	PUSH SWITCH	CH-	
	S8005	QSW0619-003Z	PUSH SWITCH	VOL+	
	S8006	QSW0619-003Z	PUSH SWITCH	MENU	
	S8007	QSW0619-003Z	PUSH SWITCH	VOL-	
△	S8901	QSP4K21-C01	PUSH SWITCH	POWER	
	TH8901	CEKP002-003	W POSISTOR		
	TH8902	CEKP002-003	W POSISTOR		
△	VA8901	ERZV10V621CS	VARISTOR		

△	Symbol No.	Part No.	Part Name	Description	Local
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PACKING



PACKING PARTS LIST

Ref. No.	Part No.	Part Name	Description	Local
1	GG10044-020A-H	PACKING CASE		
2	LC10595-002A-H	CUSHION ASSY	8 pcs. in 1 set	
3	CP30967-003-H	POLY BAG		
4	RM-C364-1H	REMOCON UNIT		
5	CP30966-001-H	POLY BAG		
6	LCT0795-001A-H	INST BOOK		
7	CM47385-00B-H	POS/SERIAL LABEL		
8	LCT0796-001A-H	DIGEST MANUAL		

REMOTE CONTROL UNIT PARTS LIST (RM-C364-1H)

Ref. No.	Part No.	Part Name	Description	Local
	3139 224 20073	BATTERY COVER		

